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ABSTRACT

This document, which is intended as a guide for workforce preparation program providers, details the Illinois occupational skill standards for programs preparing students for employment in occupations in the beef production cluster. The document begins with a brief overview of the Illinois perspective on occupational skill standards and credentialing, the process used to develop the skill standards, assumptions underlying the standards, and performance skill levels. Presented next are skill standards for 63 tasks typically performed in the following areas of beef production: accident and emergency procedures; feeding and watering; sanitation; calving; neonatal and young stock care; restraint and behavior; other health/production procedures; cattle identification, parasite/pest control; moving and breeding cattle; and record keeping. Each skill standard statement contains the following components: (1) the actual skill standard (including the conditions of performance, work to be performed, and performance criteria); (2) performance elements; and (3) assessment criteria. Appended are the following: a diagram of the site for administering injections to cattle; a beef production glossary; a glossary of education-related terms; lists of Illinois Occupational Skill Standards and Credentialing Council, Agricultural and Natural Resources Subcouncil, and Beef Production Cluster Development Committee members; and a list of necessary workplace skills. (MN)

ILLINOIS

OCCUPATIONAL SKILL STANDARDS

BEEF PRODUCTION CLUSTER

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BEEF PRODUCTION CLUSTER

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ILLINOIS OCCUPATIONAL SKILL STANDARDS

BEEF PRODUCTION CLUSTER

Endorsed for Illinois
by the
Illinois Occupational Skill Standards
and Credentialing Council

A MESSAGE FROM THE ILLINOIS OCCUPATIONAL SKILL STANDARDS AND CREDENTIALING

Preparing youth and adults to enter the workforce and to be able to contribute to society throughout their lives is critical to the economy of Illinois. Public and private interest in establishing national and state systems of industry-driven skill standards and credentials is growing in the United States, especially for occupations that require less than a four-year college degree. This interest stems from the understanding that the United States will increasingly compete internationally and the need to increase the skills and productivity of the front-line workforce. The major purpose of skill standards is to promote education and training investment and ensure that this education and training enables students and workers to meet industry standards that are benchmarked to our major international competitors.

The Illinois Occupational Skill Standards and Credentialing Council (IOSSCC) has been working with industry subcouncils, the Illinois State Board of Education and other partnering agencies to adopt, adapt and/or develop skill standards for high-demand occupations. Skill standards products are being developed for a myriad of industries, occupational clusters and occupations. This document represents the collaborative effort of the Agriculture and Natural Resources Subcouncil, and the Beef Production Cluster Standards Development Committee.

These skill standards will serve as a guide to workforce preparation program providers in defining content for their programs and to employers to establish the skills and standards necessary for job acquisition. Individual skills will be implemented by producers using the Beef Quality Assurance Program. The skills will also be used as a reference tool by managers for their employees in beef production.

We encourage you to review these standards and share your comments. This effort has involved a great many people from business, industry and labor. Comments regarding their usefulness in curriculum and assessment design, as well as your needs for in-service and technical assistance in their implementation are critical to our efforts to move forward and improve the documents.

Questions concerning this document may be directed to:

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We look forward to your comments.

Sincerely,

The Members of the IOSSCC

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The Occupational Skill Standards Act (PA 87-1210) established the nine-member Illinois Occupational Skill Standards and Credentialing Council (IOSSCC). Members of the Council represent business, industry and labor and are appointed by the Governor or State Superintendent of Education. The IOSSCC, working with the Illinois State Board of Education, Illinois Community College Board, Illinois Board of Higher Education, Illinois Department of Employment Security and Illinois Department of Commerce and Community Affairs, has created a common vision for workforce development in Illinois.

VISION

It is the vision of the IOSSCC to develop a statewide system of industry defined and recognized skill standards and credentials for all major skilled occupations providing strong employment and earnings opportunities in Illinois.

The IOSSCC endorses occupational skill standards and credentialing systems for occupations that:

- require basic workplace skills and technical training,
- provide a large number of jobs with either moderate or high earnings, and
- provide career advancement opportunities to related occupations with moderate or high earnings.

Subcouncils and Standards Development Committees

Under the direction of the Council, and in cooperation with industry organizations and associations, Industry Subcouncils have been formed to review, approve and promote occupational skill standards and credentialing systems. The Industry Subcouncils are Agriculture and Natural Resources; Applied Science and Engineering*; Business and Administrative Information Services; Communications; Construction*; Education and Training Services*; Energy and Utilities*; Financial Services; Health and Social Services; Hospitality; Legal and Protective Services*; Manufacturing; Marketing and Retail Trade; and Transportation, Distribution and Logistics. (*Subcouncils currently being formed.)

Standards Development Committees are composed of business, labor and education representatives who are experts in the related occupational cluster. They work with the product developer to

- Develop or validate occupational skill standards,
- Identify related academic skills,
- Develop or review assessment or credentialing approaches, and
- Recommend endorsement of the standards and credentialing system to the Industry Subcouncil.

Expected Benefits

The intent of skill standards and credentialing systems is to promote education and training investment to ensure that students and workers are trained to meet industry standards that are benchmarked to our major international competitors. Skill standards and credentialing systems have major benefits that impact students and workers, employers, and educators in Illinois.

Students and Workers

- Help workers make better decisions about the training they need to advance their careers.
- Allow workers to communicate more effectively to employers what they know and can do.
- Improve long-term employability by helping workers move more easily among work roles.
- Enable workers to help their children make effective academic and career and technical decisions.

Employers

- Focus the investment in training and reduce training costs.
- Boost quality and productivity and create a more flexible workforce.
- Improve employee retention.
- Improve supplier performance.
- Enlarge the pool of skilled workers.

Educators

- Keep abreast of a rapidly changing workplace.
- Contribute to curriculum and program development.
- Provide students with better career advice.
- Strengthen the relationship between schools and local businesses.
- Communicate with parents because educators have up-to-date information about industry needs.

The IOSSCC is currently working with the Illinois State Board of Education and other state agencies to integrate the occupational standards with the Illinois Learning Standards which describe what students should know and be able to do as a result of their education. The Council is also working to integrate workplace skills—problem solving, critical thinking, teamwork, etc.—with both the Learning Standards and the Occupational Skill Standards.

IOSSCC Requirements for Occupational Skill Standards

Illinois Occupational Skill Standards define what an individual should know and the expected level of performance required in an occupational setting. They focus on the most critical work performances for an occupation or occupational area.

Any occupational skill standards and credentialing system seeking IOSSCC endorsement must

- represent an occupation or occupational cluster that meets the criteria for IOSSCC endorsement, including economic development, earnings potential and job outlook;
- address both content and performance standards for critical work functions and activities for an occupation or occupational area;
- ensure formal validation and endorsement by a representative group of employers and workers within an industry;
- provide for review, modification and revalidation by an industry group a minimum of once every five years;
- award credentials based on assessment approaches that are supported and endorsed by the industry and consistent with nationally recognized guidelines for validity and reliability;
- provide widespread access and information to the general public in Illinois; and
- include marketing and promotion by the industry in cooperation with the partner state agencies.

Occupations that do not meet the earnings criteria for IOSSCC endorsement, but are part of an occupational cluster that is being developed, may be presented for recognition by the IOSSCC. IOSSCC members encourage individuals to pursue occupational opportunities identified as endorsed occupations. Examples of occupations that do not meet the endorsement criteria, but have been recognized by the IOSSCC are Certified Nurse Assistant and Physical Therapy Aide.

Skill Standards Components

Illinois Occupational Skill Standards must contain these areas:

- Performance Area
- Performance Skill
- Skill Standard
- Performance Elements
- Performance Assessment Criteria

The Council further identified three components of the Skill Standard (*Conditions of Performance, Statement of Work and Performance Criteria)* as critical work functions for an occupation or industry/occupational area. The sample format for Illinois Occupational Skill Standards on the following page provides a description of each component of a skill standard.

The sample format also illustrates the coding at the top of each page identifying the state, fiscal year in which standards were endorsed, Subcouncil abbreviation, cluster abbreviation and standard number. For example, the twenty-fifth skill standard in the Beef Production Cluster, which has been developed by the Agriculture and Natural Resources Subcouncil, would carry the following coding: IL.00.ANR.BPC.25.

SUMMARY OF WORK TO BE PERFORMED. SUMMARY IS BRIEF AND BEGINS WITH AN ACTION VERB.

IL.FY.SUBCOUNCIL. CLUSTER. STANDARD NO.

PERFORMANCE AREA

SKILL STANDARD

CONDITIONS OF PERFORMANCE

A comprehensive listing of the information, tools, equipment and other resources provided to the person(s) performing the work.

WORK TO BE PERFORMED

An overview of the work to be performed in demonstrating the performance skill standard. This overview should address the major components of the performance. The detailed elements or steps of the performance are listed under "Performance Elements."

PERFORMANCE CRITERIA

The assessment criteria used to evaluate whether the performance meets the standard. Performance criteria specify product/outcome characteristics (e.g., accuracy levels, appearance, results, etc.) and process or procedure requirements (e.g., safety requirements, time requirements, etc.).

PERFORMANCE ELEMENTS

Description of the major elements or steps of the overall performance and any special assessment criteria associated with each element.

PERFORMANCE ASSESSMENT CRITERIA

Listing of required testing, certification and/or licensing.

Product and process used to evaluate the performance of the standard.

PRODUCT

Description of the product resulting from the performance of the skill standard.

PROCESS

Listing of steps from the Performance Elements which must be performed or the required order or performance for meeting the standard.

I. Developmental Process and Occupational Definition

A. Developmental Process

After reviewing the current labor market information, the Agriculture and Natural Resources Subcouncil recommended the development of skill standards for the Beef Production Cluster. The identified career, beef production, meets the criteria established by the Illinois Occupational Skill Standards and Credentialing Council (IOSSCC) for performance skill standard development, education and training requirements, employment opportunities, earnings potential and career opportunities. A product developer knowledgeable about beef production began the process of performance skill identification. The product developer prepared an outline and framework designed to address the major skills expected in the workplace. The framework addresses skill requirements common to beef production.

The subcouncil recommended that the final skill standards product be presented to the IOSSCC. The IOSSCC reviewed the skill standards and met with the product developer, state liaison and chair of the subcouncil. Based on the review, the IOSSCC voted to endorse the beef production skill standards, recognizing the occupations of Production Assistant and General Assistant.

1. Resources

Resources used included job descriptions from the Dictionary of Occupational Titles; Illinois Department of Agriculture Livestock Management Facilities Act and Rules, August 1999 Title 35: Environmental Protection; National Research Council Nutrient Requirements of Cattle; Beef Cattle Handbook, June 1999; Beef Cattle Handbook, Housing and Equipment; Beef Cattle Science by Ensminger and Perry and Illinois task lists previously developed. Common and accepted references provided reinforcement for the direction given in the framework. Those references included current texts used by educational institutions.

2. Standards Development Committee

A standards development committee composed of educators and beef producers was convened. The framework, initial outline, matrix and draft skill standards were presented to the standards development committee for review, revision, adjustment and validation. Additional skill standard statements with performance elements and assessment criteria were developed in accordance with the direction established by the IOSSCC and were presented to the standards development committee for review and revision.

B. Occupational Definition

The livestock producer may be the manager, laborer and bookkeeper. Large livestock operations may hire managers to oversee and coordinate the work involved in livestock activities. Today's livestock operations are increasing in size, mechanization and use of information technology. Animal production often involves large capital outlays and numerous job skills as well as personal time and energy. Some producers raise livestock, manage feedlot operations or combine multiple aspects of livestock production. Other producers may raise grain and produce livestock. The workload and duties vary with the size and type of the livestock operation.

1. **Owner/Operator** typically performs all duties of a general assistant and manager/assistant manager.
2. **Manager/Assistant Manager** is concerned with the efficient and profitable production of cattle. He must be familiar with all phases of livestock production such as animal growth, insect and disease control and breeding procedures, and he must ensure compliance with federal and state regulations that apply to facility practices. In addition, livestock managers are responsible for production management decisions effecting the operation. These include production planning, labor planning and marketing decisions.
3. **General Assistant/Production Assistant** helps with the year-round or seasonal livestock operations and maintenance. Duties may include feeding, watering, weighing, weaning, castrating, branding, herding and loading cattle. He may maintain records on animals, examine animals to detect disease and injuries, assist in birth deliveries and administer medications, vaccinations or insecticides as appropriate. Maintaining cleanliness of and repairing facilities may also be his assigned duties.

II. Employment and Earnings Opportunities

A. Education and Training Requirements

Knowledge of agricultural practices, equipment operation, building maintenance and pest control, as well as local, state and federal regulations applicable to cattle production, is required. Record keeping systems must be complete, accurate and well-maintained. The occupations in this cluster require basic workplace skills, technical training and safety training. Work experience plus an Associate in Applied Science or Bachelors degree is desirable.

B. Employment Opportunities

In Illinois, overall employment of livestock producers is expected to remain relatively unchanged through the year 2008, unless disease issues reduce livestock population. A significant number of job openings will arise each year due to the need to replace some of those who retire. In many local areas throughout Illinois, farmers and farm related occupations are among those occupations expected to provide the most annual job openings, on the average.

C. Earnings Opportunities

	Middle Range Annual Earnings 2000*
Production Assistant	$ 8,000 - $23,700[1]
General Assistant	$13,500 - $18,000[1]
Manager/Assistant Manager	$28,000 - $40,000[1]
Owner/Operator	$21,000 - $50,000

**Middle range is the middle 50%, i.e., one-fourth of persons in the occupation earn below the bottom of the range and one-fourth of persons in the occupation earn above the top of the range.*

[1]In some cases, wages are supplemented with other compensation such as housing (frequently with some utilities paid) and use of a vehicle.

Sources: 1999 Survey of Clients by Profitable Solutions; 1999 Agri-Careers Survey.

III. Assessment and Credentialing Systems

The IOSSCC recognizes that industry commitment for third-party assessment is beneficial and requests that each standards development committee and/or subcouncil identifies the most beneficial method for assessing the standards.

Beef cattle producers are in the process of developing standards for quality beef production. Additionally, the state of Illinois has credentialing for certified livestock managers.

IV. Industry Support and Commitment

The primary areas currently identified for industry support and commitment of occupational skill standards are development, updating and marketing. Business and industry partners may identify future uses of occupational skill standards such as credentialing/certification, career development of employees and specifications for outsource training programs.

A. Industry Commitment for Development and Updating

1. The development of skill standards for beef production is the result of effort by the Agriculture and Natural Resources Subcouncil and the Beef Production Cluster Standards Development Committee. Names of the persons serving on the subcouncil and the standards development committee are located in the appendices.
2. In developing the products, the following steps were completed:
   a. Identification and prioritization of a career ladder, identifying jobs by name
   b. Review of resources
   c. Development of draft matrix of performance standards
   d. Development of a performance standard that was identified on the matrix
   e. Convening of standards development committee of incumbent workers
   f. Review, validation and approval of skill standards by the standards development committee
   g. Review and approval of standards by subcouncil
   h. Endorsement of skill standards by the IOSSCC.

B. Industry Commitment for Marketing

The Agriculture and Natural Resources Subcouncil is committed to marketing and obtaining support and endorsement from the leading industry associations impacted by the skill standards. Upon recognition/endorsement of the standards by the IOSSCC, the subcouncil strongly recommends that professional trade groups, academic groups, etc. develop and provide an in-service/seminar package to promote skill standard awareness and to obtain full industry support and commitment for the development of a full industry marketing plan.

The Agriculture and Natural Resources Subcouncil encourages the availability of skill standards to the public including learners, parents, workers, educators at all levels, employers and industry personnel.

ASSUMPTIONS FOR BEEF PRODUCTION CLUSTER STANDARDS

Skill standards assume that individuals have received education and/or training in a setting such as a secondary, post-secondary and/or apprenticeship/on-the-job training program and have the background knowledge necessary for performing the skill standards contained in this publication. The education and/or training includes instruction for the proper handling and operation of materials, tools and equipment required for performing the skills including the purpose of use, when to use, how to use and any related safety issues.

The instructional/training program must adhere to all local, state and federal licensing and/or certification requirements as set by law, if applicable.

The Standards Development Committee developed these skill standards based on the following assumptions:

1. Workplace skills (employability skills) are expected of the individual. Socialization skills needed for work are related to lifelong career experience and are not solely a part of the initial schooling process. These are not included with this set of statements.
2. Specific policies and procedures of the work site will be made known to the individual and will be followed.
3. Time elements outlined for the skill standards result from the experience and consideration of the panel of experts who made up the standards development committee.
4. Skills will progress from simple to complex. Once a skill has been successfully performed, it will be incorporated into more complex skills.
5. Skill standards describe the skill only and do not detail the background knowledge or theory related to the particular skill base. Although the skill standard enumerates steps to successful demonstration, rote approaches to the outcomes are not prescribed.
6. Skills will be completed in an expedient and safe manner.
7. Skill standards are selected because they meet workplace needs and are designed to meet professional standards of practice.
8. Skill standards do not replace, supersede or substitute for procedure manuals.
9. Skill standards do not supersede or take the place of industry certification or graduation from an accredited program of study.
10. Skills identified under "Neonatal and Young Stock Care" and "Other Health and Production Procedures" may be grouped and several skills performed during a single processing period.
11. All equipment is in good working order, with safety devices in place.
12. Needles are not bent or broken.
13. All medications and vaccines are properly maintained and safety precautions followed.
14. All individuals handling cattle and cattle waste have received safety training.
15. Individuals managing or applying cattle nutrients are trained in proper disposal methods.
16. Cattle facilities and areas are properly ventilated and environmentally regulated.
17. All individuals working with cattle, especially breeding stock, have had supervised training and have a maturity level adequate to safely handle such animals.
18. Biosecurity protocol is detailed and followed by all individuals.

PERFORMANCE SKILL LEVELS

	GENERAL ASSISTANT/ PRODUCTION ASSISTANT	MANAGER/ASSISTANT MANAGER	OWNER/OPERATOR
ACCIDENT AND EMERGENCY PROCEDURES			
Maximize Farm Safety	•	•	•
Follow Accident/Incident Response Procedures	•	•	•
Submit Accident and Insurance Reports and Claims		•	•
FEEDING AND WATERING			
Water without Automation	•	•	•
Water with Automatic Systems			
Mix Feeds	•	•	•
Select Rations		•	•
Feed Feedlot Cattle	•	•	•
Feed Non-feedlot Cattle	•	•	•
SANITATION			
Remove Cattle Waste	•	•	•
Store Cattle Waste	•	•	•
Dispose of Cattle Waste	•	•	•
Clean and Disinfect Cattle-Handling Equipment and/or Facilities	•	•	•
Dispose of Dead Cattle	•	•	•
CALVING			
Prepare Calving Area	•	•	•
Manage Breeding Females Near Calving	•	•	•
Induce Calving		•	•
Observe Calving	•	•	•
Assist with Calving	•	•	•
NEONATAL AND YOUNG STOCK CARE			
Establish Respiration in Newborns	•	•	•
Ensure Availability and Ingestion of Colostrum			
Treat Navel Cord	•	•	•
Feed Creep/Supplement	•	•	•
RESTRAINT AND BEHAVIOR			
Develop and Use Basic Understanding of Cattle Behavior	•	•	•
Restrain Calves by Flanking	•	•	•
Restrain Calves Using Working Alley	•	•	•
Restrain Cattle Using Working Chute and Head Gate		•	•
Restrain Cattle Using Halters	•	•	•
Control Cattle Using Nose Lead, Nose Hold, Tail Twist or Tail Hold	•	•	•

PERFORMANCE SKILL LEVELS *(Continued)*

	GENERAL ASSISTANT/ PRODUCTION ASSISTANT	MANAGER/ASSISTANT MANAGER	OWNER/OPERATOR
RESTRAINT AND BEHAVIOR			
Develop and Use Basic Understanding of Cattle Behavior	•	•	•
Restrain Calves by Flanking	•	•	•
Restrain Calves Using Working Alley	•	•	•
Restrain Cattle Using Working Chute and Head Gate	•	•	•
Restrain Cattle Using Halters	•	•	•
Control Cattle Using Nose Lead, Nose Hold, Tail Twist or Tail Hold	•	•	•
OTHER HEALTH/PRODUCTION PROCEDURES			
Perform General Health Inspection	•	•	•
Recognize and Manage Bloat	•	•	•
Castrate Bulls Non-surgically with Bands	•	•	•
Castrate Bulls Non-surgically with Emasculatome	•	•	•
Castrate Bulls Surgically	•	•	•
Vaccinate Swine	•	•	•
Give Other Intramuscular or Subcutaneous Injections	•	•	•
Treat a Minor Wound	•	•	•
Implant Cattle	•	•	•
Dehorn Young Cattle	•	•	•
Dehorn or Remove Horn Tips from Older Cattle	•	•	•
Weigh with Livestock Scales	•	•	•
Wean Cattle	•	•	•
CATTLE IDENTIFICATION			
Freeze Brand Cattle	•	•	•
Hot Brand Cattle	•	•	•
Insert Ear Tag	•	•	•
Tattoo Cattle	•	•	•
Use Electronic Identification	•	•	•
ANIMAL PARASITE/PEST CONTROL			
Control Internal Parasites	•	•	•
Control External Parasites and Pests	•	•	•
FACILITY PEST CONTROL			
Control Birds, Rodents and Other Animal Pests	•	•	•
Control Insect Pests	•	•	•
MOVE CATTLE			
Move Cattle on Foot	•	•	•
Transport Cattle	•	•	•

PERFORMANCE SKILL LEVELS *(Continued)*

	GENERAL ASSISTANT/ PRODUCTION ASSISTANT	MANAGER/ASSISTANT MANAGER	OWNER/OPERATOR
BREEDING CATTLE			
Manage and Evaluate Breeding Females		•	•
Determine Reproductive Status of Breeding Females		•	•
Manage and Evaluate Breeding Males (Bulls)		•	•
Detect Estrus (Heat)	•	•	•
Detect Estrus (Heat)		•	•
Evaluate Breeding Male (Bull) Fertility		•	•
Collect Semen		•	•
Inseminate Females Artificially		•	•
Manage Natural Breeding Process	•	•	•
RECORD KEEPING			
Maintain Records	•	•	•
Analyze Records		•	•

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

- Safety equipment and systems
- Safety materials and training manuals
- Safety checklists with standard operating policy and procedures
- Personal Protective Equipment (PPE)
- Material Safety Data Sheets (MSDS)
- Chemical storage and labeling policy and procedures
- Safety storage areas
- Safety signage
- Safety log
- Property forms (e.g., safety status checklist, safety violation log, work order, etc.)
- First aid kit
- Disaster drill policy and procedures
- Emergency evacuation plans
- Local, state and federal regulations
- Annual Occupational Safety and Health Administration (OSHA) log of work-related employee injuries and illnesses (OSHA Log No. 200)
- Environmental Protection Agency (EPA) regulations
- National Fire Protection Association (NFPA) equipment standards

WORK TO BE PERFORMED

Maximize facility safety by identifying and eliminating potential safety hazards.

PERFORMANCE CRITERIA

All safety hazards that can cause injury or accidents are eliminated. Safety violations are reported to designated person and safety violation documentation is completed.

The skill is performed with 100% accuracy.

All breaches of safety are reported immediately. Identification of potential safety hazards is ongoing.

PERFORMANCE ELEMENTS

1. Post emergency plan folders for all equipment and chemicals.
2. Post list of appropriate PPE to be worn when operating equipment.
3. Clean up all spills in accordance with Environmental Protection Agency (EPA) regulations.
4. Remove all objects or spills located where they could cause injury or damage.

5. Maintain appropriate fire extinguishers and fire protection equipment according to national fire Protection Association (NFPA) standards.
   a. Check expiration dates on fire extinguishers.
   b. Ensure authorized service center maintains fire extinguishers yearly.
6. Store combustible materials away from ignition sources.
7. Store caustic or poisonous substances in identified storage areas.
8. Ensure required MSDSs are updated and easily accessible.
9. Ensure all equipment is maintained according to manufacturers' specifications including all safety shields and guards.
10. Ensure lockout procedures are followed for all equipment.
11. Maintain evacuation equipment (e.g., flashlights, light sticks, blankets, etc.).
12. Maintain first aid kit supplies.
13. Report all safety violations to designated person.

PERFORMANCE ASSESSMENT CRITERIA

OSHA and EPA standards/regulations are followed.

PRODUCT

All safety hazards are identified and reported to maintenance and/or eliminated. Safety violations are logged and reported to designated staff. Appropriate procedures for extreme weather conditions are followed.

PROCESS

All performance elements for maximizing farm safety are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

FOLLOW ACCIDENT/INCIDENT RESPONSE PROCEDURES.

ACCIDENT AND EMERGENCY PROCEDURES

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Property accident/incident response policy and procedures
Accident/incident-specific checklists
Insurance standards/regulations
First aid kit
Telephone
Accident/incident report and logbook
Disaster policy and procedures
Emergency call lists for
- medical services
- police department
- fire department
- management personnel
- emergency response team
- ambulance services
- Illinois Environmental Protection Agency (EPA)

Local, state and federal laws and regulations

WORK TO BE PERFORMED

Follow accident/incident response procedures.

PERFORMANCE CRITERIA

All accidents/incidents are reported to designated individual/agency according to property accident/incident response policy and procedures and details of all accidents/incidents are logged and documented.

The skill is performed with 100% accuracy.

Time required to complete the skill varies depending on information required for documentation and type of accident/incident.

PERFORMANCE ELEMENTS

1. Assess accident/incident situation.
2. Determine seriousness of the accident/incident.
3. Call emergency personnel if necessary.
4. Assist each individual by most appropriate means.
5. Establish individual communication checkpoints as required.
6. Direct individuals to appropriate safe areas as required.
7. Report accident/incident to designated individual(s) or entity (e.g., worker's compensation representative, insurance provider, etc.).
8. Complete accident/incident documentation.

PERFORMANCE ASSESSMENT CRITERIA

All insurance, local, state and federal regulations are followed.

PRODUCT

All accident/incident reports and logs are completed and reported to designated individual or entity. Emergency personnel are contacted as required.

PROCESS

All performance elements for following accident/incident response policy and procedures are critical. Performance element two is critical for determining which accident/incident response procedure(s) must be followed and who should be contacted.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Workplace policy and procedures
Insurance standards/regulations
Insurance report and claim forms
Accident report and logbook
Emergency call lists
Local, state and federal laws and regulations

WORK TO BE PERFORMED

Submit accident reports and claims to insurance company and other appropriate agencies.

PERFORMANCE CRITERIA

All accident reports and claims are submitted to the insurance company and other appropriate agencies and filed according to the insurance company's policy and procedures.

All necessary forms are completed within 24 hours.

PERFORMANCE ELEMENTS

1. Notify police or emergency personnel and give details of accident/incident.
2. Report accidents/incidents to appropriate individuals and agencies.
3. Prepare accident reports and claims.
4. Complete supporting documentation (e.g., drug test for CDL licensed driver, etc.).
5. Submit completed forms to insurance company and other appropriate agencies.
6. File completed forms.

PERFORMANCE ASSESSMENT CRITERIA

All insurance, local, state and federal regulations are followed.

PRODUCT

Accident reports are prepared and submitted to insurance company as required. Completed forms are filed accordingly.

PROCESS

The performance elements for submitting accident and insurance reports are critical. Performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Natural water sources (e.g., streams, springs, lakes and ponds)
Water tanks with nearby hydrants or other source of water
Hoses, pipes or other water conduits
Heaters and/or insulation (if needed to prevent icing)
Main storage tank (optional)
Tank truck or portable storage tank (optional)

WORK TO BE PERFORMED

Provide clean, fresh water to cattle.

PERFORMANCE CRITERIA

A steady and adequate supply of clean, fresh water is ensured.

Cattle self-water under normal circumstances.

Time required to ensure both availability and quality varies.

PERFORMANCE ELEMENTS

1. Provide cattle with safe access to water sources, either natural or in containers such as tanks.
2. Arrange facilities so water is commonly available to animals within one-half mile.
3. Ensure adequate supply; store water if necessary.
4. Heat or insulate as necessary to prevent freezing.
5. Observe appearance and behavior of cattle. (Cattle that are water deprived appear gaunt and restless. Dehydration can cause weight loss and death.)
6. Transport water to animals if sources are no longer adequate.
7. Test water periodically for nitrate content (maximum level).

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle have an adequate supply of clean, fresh water via automatic system.

PROCESS

All performance elements for watering without automation are critical. Performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Automatic waterer
Heater (usually electric or gas)
Manufacturer's operating manual

WORK TO BE PERFORMED

Provide clean, fresh water to cattle using an automatic system.

PERFORMANCE CRITERIA

An adequate supply of clean, fresh water is ensured.

Cattle self-water under normal circumstances.

Time required to check for cause of system failure is 1-2 minutes..

PERFORMANCE ELEMENTS

1. Ensure proper installation of selected type of watering system.
   a. Insulated to prevent freezing
   b. Properly grounded to prevent electrical shock
   c. Height adjusted to age/size of cattle
2. Ensure flow rate and supply are adequate for stock to be maintained according to manufacturer's recommendations. It is best if water is available free choice, but recommendations are listed as follows:

	Daily Water/Head/Day in Gallons	
Production Stage	Cold	Hot
Feeder cattle 400-800 pounds	4-7	8-17
Feeder cattle 800-1200 pounds	8-11	15-22
Bred heifers 800 pounds	7	15
Dry cows 1000 pounds	9	18
Lactating cows 1000 pounds	13	25
Bulls 1500 pounds	14	27

Source: *Midwest Plan Service – Beef Housing and Equipment Handbook*

3. Provide water that is fresh and clean.
4. Maintain clean watering systems.
5. Ensure ice does not prevent drinking twice daily. Incorporate heating unit if needed.
6. Test water periodically for nitrate content (maximum level).
7. Check water source daily (twice daily during hot weather).
8. Observe appearance and behavior of cattle. (Cattle that are water deprived appear gaunt and are restless. Dehydration can cause weight loss and death.)
9. Provide water from another source if any needed repairs cannot be accomplished within 12 hours.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle have an adequate supply of clean, fresh water.

PROCESS

All performance elements for watering with automatic systems are critical. Performance elements are numbered to show an appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Equipment for mixing feeds
Scales (if processing on farm)
Record keeping materials
Labeling materials
Access to laboratory assays
Work space and storage areas
Appropriate housing
Appropriate feed additives and/or medications
Species' feed specifications
Personal Protective Equipment (PPE)
Manufacturing practices guidelines
Facility protocol
Food and Drug Administration (FDA) standards/regulations
United States Department of Agriculture (USDA) standards/regulations
Occupational Safety and Health Administration (OSHA) standards/regulations

WORK TO BE PERFORMED

Mix feeds for use in facility.

PERFORMANCE CRITERIA

Feeds are mixed according to identified feed specifications with proper labeling and safe storage. Unsafe carryover of medicated feed products is prevented. All activities related to mixing feeds are carried out according to facility protocol.

Feeding and feed processing is an on-going activity.

PERFORMANCE ELEMENTS

1. Utilize PPE.
2. Prevent contamination by maintaining cleanliness and using designated workspaces and storage areas.
3. Prevent vermin and pest contamination.
4. Check equipment to be sure it can produce feeds of intended additive or medication potency and purity.
5. Ensure equipment is in safe and operable condition.
6. Cover auger intakes with strong grate to prevent hands, feet and clothing from contacting auger.
7. Ensure coworkers/other individuals are not too close before starting equipment.
8. Mix feeds to specifications.
9. Clean up spills.
10. Clean equipment to prevent contamination using standardized procedure.

11. Flush equipment by running batch of nontreated feeds through machine after additive/medicated feeds and then adding nontreated flush batch to treated feed.
12. Label and store medications and feeds properly, separating from other farm chemicals.
13. Maintain written record of feed formulation and disposition of product.
14. Maintain labeled samples of purchased feeds and feed ingredients until livestock fed these batches are marketed.
15. Maintain proper manufacturers' documentations of purchased ingredients.
16. Store records for treated feeds for required period of time after feeding, including records of additive/medication purchases and on-farm mixing.
17. Verify feed formulation by periodical analysis.

PERFORMANCE ASSESSMENT CRITERIA

FDA, USDA and OSHA standards/regulations are followed.

PRODUCT

Feeds are maintained to prevent cross contamination by carryover treated/medicated feed products, and FDA and/or USDA inquiries can be answered by referring to records and samples maintained.

PROCESS

All performance elements for proper feed and feed processing are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle (of a specific class)
Feeding and nutrition guidelines (e.g., National Research Council [NRC] Nutrient Requirements of Cattle, nutritionist's recommendations, etc.)

WORK TO BE PERFORMED

Select ration and formulation for class of cattle to be fed, including medication and other additives.

PERFORMANCE CRITERIA

Rations are determined and properly mixed according to nutrition guidelines to achieve optimal production and herd health.

Selecting and formulating rations is an ongoing activity.

PERFORMANCE ELEMENTS

1. Determine desired ration for class of cattle to be fed using guides such as those from NRC, or rely on good commercial feed supplier, veterinarian or nutritionist.
2. Make sure feed ingredients are appropriate, clean and properly processed.
3. Incorporate feed additives (e.g., anthelminthics [dewormers], antibiotics, hormones, ionophones), as recommended, to increase efficiency in production.
4. Determine that animal is receiving adequate levels of nutrients and volume of feed and, if necessary, weigh and measure nutrients and feed periodically.
5. Observe cattle for nutritional problem symptoms such as bloat, endotoxemia, diarrhea, irregular estrus or abortions.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Proper ration is selected for class of cattle to be fed.

PROCESS

All performance elements for selecting rations and formulation for class of cattle to be fed are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Feedlot cattle
Rations appropriate for age and size of cattle being fed
Desired feed additives (e.g., Poloxolene, Rumensin, MGA)
Properly processed feeds
Facility protocol for starting cattle on full feed
Feeding structures such as feed bunks
Conveyors and elevators (if needed)
Recording materials
Beef Housing and Equipment Handbook

WORK TO BE PERFORMED

Feed feedlot cattle for cost-effective rapid gain while maintaining animal health.

PERFORMANCE CRITERIA

Cattle are healthy and show acceptable rates of gain, usually 3 pounds or more per day, depending on size, sex, environment and rate of feeding.

Time required to complete the skill varies based on degree of automation and number of animals to be fed.

PERFORMANCE ELEMENTS

1. Make sure feed bunks or other structures are appropriately constructed for size and numbers of cattle to be fed (e.g., a bunk capacity of 1 ½ cubic feet per linear foot at a throat height of 20 inches for most feedlot cattle). Refer to *Beef Housing and Equipment Handbook* for construction details.
2. Locate feed bunks for ease of access, drainage away from feeder and for dealing with environmental conditions such as snow.
3. Feed cattle regularly at a consistent time and in a consistent order and feed twice a day unless otherwise directed.
4. Clean feed bunks thoroughly once a day or as needed.
5. Remove any spoiled feed or manure daily.
6. Use farm protocol to gradually bring cattle new to feedlot onto full rations.
7. Observe all cattle, especially recent arrivals, for signs of digestive disturbances such as bloat, going off feed or diarrhea.
8. Determine cause of apparent digestive difficulties and treat cattle appropriately based on consultation with supervisor or veterinarian.
9. Record and evaluate weight gain, time needed to reach market weight and losses, and determine cost effectiveness.
10. Consider modifying rations or procedures if facility data indicates need.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Feedlot cattle are fed.

PROCESS

All performance elements for feeding feedlot cattle are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Specific class of cattle to be fed (e.g., pregnant females, calves, growing animals)
Feedstuffs appropriate for class of cattle
Rations formulated for class of cattle
Supplemental feeds and additives, as needed
Appropriate feeding structures

WORK TO BE PERFORMED

Feed appropriate feeds and additives to cattle in a safe, economically sound manner for satisfactory growth and/or performance.

PERFORMANCE CRITERIA

Cattle perform or grow at acceptable facility and industry standards.

Feed quality is maintained and appropriate feed is accessible.

Cattle remain healthy and are not injured.

Time required to complete the skill varies depending on type of feedstuffs used, number of animals to be fed and degree of automation.

PERFORMANCE ELEMENTS

Note: Cows on a low plane of nutrition show more reproductive failure and calf losses than cows on medium to high planes of nutrition (live calf rates of 71% versus 86% and 93%, respectively). A higher plane of nutrition also produces more milk, thus higher calf weaning weights in general. Feeding inadequate amounts of or poor quality feed is false economy and will be reflected in lower production and poorer health.

1. Group cattle (e.g., weaned calves, dry cows, lactating cows, mature bulls, etc.) based on nutritional requirements of class and body condition score.
2. Determine requirements of that class. (See Skill 7.)
3. Determine feedstuffs (e.g., pasture, legume hay, silage, etc.) that will serve as base element(s) of ration.
4. Determine which supplements will be needed to balance ration.
5. Select and utilize feeding structures based on class of animal, feedstuffs and supplements to be used and availability.
6. Allow cattle access to feed on a free choice or limited feed basis, depending on animal need and production level desired.
7. Keep feeding structures filled as needed.

PERFORMANCE ASSESSMENT CRITERIA

8. Clean feeding structures weekly or as dictated by facility policy, removing any spoiled feed, debris and manure.
9. Observe animals for condition and/or rate of gain.
10. Take periodic measurements to determine level of production such as birth weight, weaning weight, body condition scores, etc.
11. Record and analyze data.
12. Modify feed rations or procedures when necessary.

PRODUCT

Nonfeedlot cattle are properly fed.

PROCESS

All performance elements for feeding feedlot cattle are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Appropriate waste-handling equipment and tools
Cattle waste-handling safety training guidelines
Personal Protective Equipment (PPE)
Facility's policy and procedures
Local, state and federal standards/regulations
Illinois Department of Agriculture (IDOA) standards/regulations

WORK TO BE PERFORMED

Remove waste from housing area of cattle.

PERFORMANCE CRITERIA

Cattle waste is removed from housing area according to facility policy and procedures, adhering to local, state and federal regulations and IDOA standards/regulations.

-Time required to complete the skill varies with size of area to be cleaned and amount of cattle waste that has accumulated.

PERFORMANCE ELEMENTS

Note: Toxic and/or asphyxiating gases such as methane, carbon dioxide, hydrogen sulfide and ammonia may build up to lethal levels. Never enter storage tank unless absolutely necessary and then with professional assistance on site.

1. Utilize PPE.
2. Select equipment appropriate for size and type of area to be cleaned.
3. Review safety procedures with supervisor and follow all safety guidelines.
4. Ensure proper ventilation and airflow in areas associated with waste handling and storage.
5. Provide maximum ventilation when agitating or pumping manure.
6. Maintain increased ventilation for 1-2 days after agitation has ceased.
7. Clean when no cattle are in housing area, if scheduling permits.
8. Remove waste from housing area and dispose of or store according to facility policy and procedures.

PERFORMANCE ASSESSMENT CRITERIA

IDOA, local, state and federal standards/regulations are followed.

PRODUCT

Cattle waste is removed from housing area.

PROCESS

All performance elements for removing cattle waste are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Personal Protective Equipment (PPE)
Cattle waste-handling safety training guidelines
Record keeping system
Storage site to include:
Waste pit (below slatted floor)
Area (where contamination of water supply cannot occur) for piling waste
Container for holding waste prior to disposal
Lagoon or detention pond
Local, state and federal standards/regulations
Illinois Department of Agriculture (IDOA) standards/regulations

WORK TO BE PERFORMED

Store cattle waste prior to disposal.

PERFORMANCE CRITERIA

Waste is stored according to IDOA standards/regulations. Storage pit and lagoon are inspected and documentation is recorded every two weeks at a minimum. Other facilities and equipment may require more frequent inspection.

Time required to store waste for future disposal varies according to method used, number of cattle and size of facility.

PERFORMANCE ELEMENTS

Note: Never enter storage tank unless absolutely necessary and then only with professional assistance on site.

1. Ensure proper ventilation and air flow in areas associated with waste handling and in storage areas where toxic or asphyxiating gases such as carbon dioxide, hydrogen sulfide, methane and ammonia may build up to lethal levels.
2. Ensure waste material falls through slats in floor and collects in pit below.
3. Collect semisolid and liquid waste material in detention pond and/or lagoon.
4. Place waste material in container (e.g., Slurrystore) that will prevent leakage.
5. Pile waste material (manure pack) on concrete pad or on ground away from water supply to avoid contamination.
6. Monitor waste storage, as required, and document.

PERFORMANCE ASSESSMENT CRITERIA

IDOA, local, state and federal standards/regulations are followed.

PRODUCT

Cattle waste is stored.

PROCESS

All performance elements for storing cattle waste are critical, but storage method varies according to facility equipment and housing. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Waste-handling equipment
Waste-handling safety training guidelines
Additional assistants
Personal Protective Equipment (PPE)
Comprehensive Nutrient Management Plan (CNMP)
Livestock Management Facilities Act
Environmental Protection Agency (EPA) standards/regulations
Local, state and federal standards/regulations
Illinois Department of Agriculture (IDOA) standards/regulations

WORK TO BE PERFORMED

Dispose of cattle waste in a manner that is safe and environmentally approved.

PERFORMANCE CRITERIA

Waste is disposed of according to IDOA standards/regulations and EPA guidelines.

Time required to dispose of cattle waste varies according to quantity to be disposed of and method being used.

PERFORMANCE ELEMENTS

1. Identify EPA guidelines and Title 35 (IDOA).
2. Implement CNMP according to Livestock Management Facilities Act.
3. Utilize PPE.
4. Prepare waste-handling equipment
5. Enter storage tank *only when absolutely necessary* and only with adequate safety training, precautions and equipment, and professional assistance on site.
   a. Wear self-contained breathing equipment and be certified in its use.
   b. Wear safety line and work with at least two people strong enough to hoist a person out of pit if there are problems.
6. Apply waste to land according to equipment manufacturers' guidelines and a CNMP to prevent water supply contamination.

PERFORMANCE ASSESSMENT CRITERIA

IDOA, local, state and federal standards/regulations are followed.

Certification for use of self-contained breathing apparatus is required if storage tank is entered.

PRODUCT

Cattle waste is disposed of in an environmentally safe manner.

PROCESS

All performance elements for disposal of cattle waste are critical and must be performed in sequence.

CLEAN AND DISINFECT CATTLE-HANDLING EQUIPMENT AND/OR FACILITIES.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cleaning schedule
Scrub brushes, brooms and shovels
High-pressure washer
Equipment safety training guidelines
Adequate water supply
Approved disinfectant
Manufacturer's directions
Personal Protective Equipment (PPE)

WORK TO BE PERFORMED

Clean and disinfect cattle-handling equipment and/or facilities.

PERFORMANCE CRITERIA

Equipment and/or facility is cleaned and disinfected, eliminating waste, dirt and germs.

Time required to complete the skill varies depending on equipment, building size and waste and debris buildup.

PERFORMANCE ELEMENTS

1. Put on PPE when entering or prior to entering facility.
2. Remove as much debris as possible by scraping, sweeping and/or scooping.
3. Presoak area with water.
4. Clean area with pressure washer, using safety training guidelines.
5. Rewash areas that do not seem adequately clean.
6. Follow manufacturers' directions for mixing disinfectants or use premixed solutions.
7. Apply disinfectants thoroughly according to manufacturers' directions.
8. Follow manufacturers' directions regarding rinsing.
9. Allow equipment to dry, if possible, before bringing cattle back into handling facilities.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle equipment and/or facility is cleaned and disinfected.

PROCESS

All performance elements for cleaning and disinfecting cattle-handling equipment and/or facilities are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Dead cattle or cattle which must be euthanized
Burial sites and/or carcass storage area
American Association of Bovine Practitioners (AABP) brochure/guidelines for euthanasia
Personal Protective Equipment (PPE)
Illinois Department of Agriculture (IDOA) standards/regulations for burial
IDOA Dead Animal Disposal Act

WORK TO BE PERFORMED

Dispose of dead cattle.

PERFORMANCE CRITERIA

Cattle carcasses are disposed of according to IDOA standards and regulations.

Time required to complete the skill varies based on number of cattle, method of disposal and predisposal requirements (e.g., examination, etc.)

PERFORMANCE ELEMENTS

1. Use AABP guidelines and discussion with a qualified veterinarian to develop euthanasia action plan, considering human safety, animal welfare, practicality/technical skill required, cost, aesthetics (degree of unpleasantness to observer) and limitations (size of animal, location, etc.).
2. Locate site(s) for euthanasia and carcass storage based on access for producer and pickup service, prevention of contamination and spread of disease, and appropriate public relations.
3. Put on PPE.
4. Euthanize any animal that is determined by supervisor or veterinarian to be beyond recovery to a normal condition.
5. Use approved method of euthanasia.
6. Determine method of disposal based on availability and IDOA standards/regulations.
7. Dispose of carcasses following IDOA regulations.
8. Place carcasses in appropriate, accessible, designated storage area for later removal by rendering service.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Dead cattle are disposed of properly.

PROCESS

All performance elements for disposing of dead cattle are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cleaned and disinfected dry stall or maternity pen (12 foot by 12 foot recommended minimum)
Lighting adequate for reading
Bedding (e.g., straw)
Flashlight for night checks
Water supply
Supplemental heat source
Phone access
Emergency phone numbers
Equipment assistance to include:
- Halter and rope
- Obstetrical chains and handles (clean)
- Lubricant disinfectant soap in squeeze bottle
- Disposable obstetric glove
- Plastic pail
- Towels (clean and dry)
- Mechanical calf puller

Personal Protective Equipment (PPE)

WORK TO BE PERFORMED

Prepare calving area.

PERFORMANCE CRITERIA

Neonatal losses are kept to a minimum (10% or less) by providing an appropriate calving environment which provides for cow and calf health, comfort and safety.'

Time required to complete the skill varies based on conditions, but checking area and putting down bedding should take 5 - 10 minutes.

PERFORMANCE ELEMENTS

Note: Some producers prefer to have calving take place in clean, well drained, sodded pastures away from other livestock. This is adequate if weather conditions are mild and animals can be observed and restrained.

1. Utilize PPE.
2. Assemble equipment that might be needed for assistance.
3. Place equipment where readily accessible.
4. Check area for damages and repair as needed.
5. Provide for fresh water and feed.

6. Provide source of heat as needed for calf.
7. Place bedding in calving area.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Calving area is prepared.

PROCESS

All performance elements for preparing calving area are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used

MANAGE BREEDING FEMALES NEAR CALVING.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Breeding females that are:
- Showing indications of approaching calving
- Within a few days of due dates (groups or individual animals)

Record keeping system
Individual breeding female calving records
Calving site with provisions for feed and water
Accommodations in pastures or barns that allow frequent observation

WORK TO BE PERFORMED

Manage near term breeding females.

PERFORMANCE CRITERIA

Breeding females calve with minimum stress and adequate care immediately before and after calving.

Time required to complete the skill varies. Activities begin when marked indications of nearness to calving are seen or management procedures warrant.

PERFORMANCE ELEMENTS

1. Move female to accommodations that allow frequent observation.
2. Familiarize female with calving area prior to calving if possible.
3. Observe breeding females frequently (minimum of twice daily, including a night visit) for indications of calving, such as relaxation of tail head, enlarged vulvas, clear mucus from vulva, enlarged udders with full teats and restless, distressed behavior.
4. Utilize other observation tools such as security cameras and monitors when available.
5. Continue to provide adequate nutrition and water.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Breeding females are observed and prepared for calving.

PROCESS

All performance elements for managing breeding females near calving are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Calving stall or pen
Breeding females within 269 days of gestation length
Breeding protocol
Adrenal steroid with dosage recommendations
Safety training manuals for prescription products
Manager/veterinarian
Disposable needle(s) (18 or 20 gauge and 1 or 1½ inch needle)
Sterile syringe(s)
Handler(s)
Tools to assist with calving (e.g., obstetrical gloves, calving chains, handles, etc.)

WORK TO BE PERFORMED

Induce calving.

PERFORMANCE CRITERIA

Breeding females calve under supervision.

Calving is induced within 72 hours of injection of adrenal steroids into breeding females of 269 days or more of gestation.

Time required for injection is 30 seconds to one minute.

PERFORMANCE ELEMENTS

Note: Induced calving often results in retained placentas and lowered milk production.

1. Place properly conditioned breeding females in calving environment.
2. Determine gestation length and treat only females of at least 269 days of gestation.
3. Place needle on syringe and load syringe with recommended amount of adrenal steroid. (See Skill 36.)
4. Restrain female.
5. Inject adrenal steroid into neck muscle of females.
6. Observe frequently, with minimal disturbance to female, for next 24 to 72 hours for indications of calving.
7. Assist calving as needed and treat retained placentas as recommended by veterinarian or supervisor.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Pregnant females are induced and calving commences.

PROCESS

All performance elements for inducing calving of breeding females are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

OBSERVE CALVING.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Calving females in final days of gestation with pronounced indications of calving
Proper calving environment
Equipment to assist with calving if needed
Disinfectant for navel cord (usually 7% iodine solution)

WORK TO BE PERFORMED

Observe calving process and assist if needed.

PERFORMANCE CRITERIA

Females calve with minimal stress and have 90% or higher survival rate. Calving process is monitored to assure normality and to assure handler assistance is available, if needed.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

Note: Observe with minimal disturbance to female. Females may be protectively aggressive. First-calf heifers often have more difficulty calving and should be watched carefully.

1. Observe females for early labor signs or first stage of labor (e.g., milk droplets on teats; an elongated, swollen vulva; restlessness; lying down then getting up; kicking at belly; apparent discomfort; rapid respiration). Stage one labor, sometimes called prelabor, usually lasts several hours and is indicated by female seeking isolation, looking back at her hindquarters and getting up and down frequently.
2. Observe females for signs of imminent calving or second stage labor as calf enters birth canal (e.g., rupture of "water bag" with expulsion of transparent amber fluid; lying down and having strong abdominal contractions; blood-tinged fluid coming from vulva; milk dripping from teats; delivery or attempted delivery of calf). Normal stage two labor will usually be over within 1 - 2 hours, often within 20 minutes in females who have previously had calves.
3. Observe delivery of calf without interfering unless problems become apparent. (If red membranes appear or delivery is not completed within one hour, female appears exhausted or calf is not in normal front feet first and downward followed by nose position, contact supervisor and/or provide assistance.)
4. Observe calf for normal behavior (respiration established, a nursing reflex, attempting to stand and nurse), making sure membranes over its head are broken so it does not suffocate, and aid as needed.

5. Observe females for additional contractions for expulsion of placental membranes (third stage labor) at end of calving. This generally takes 2 - 6 hours.
6. Keep record of time until placental membranes are expelled, and report them as retained to a supervisor or veterinarian if they take more than 8 hours to be expelled.
7. Remove placental membranes once they are expelled and dispose of by incinerating or burying.
8. Disinfect navel cord with iodine as soon as it is broken from placenta.
9. Make sure all calves nurse and obtain first milk (colostrum) within a few hours. Assist if necessary.
10. Allow cow and calf to rest for a few hours, if all is normal.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Calving is observed and assistance provided, if necessary.

PROCESS

All performance elements for observing calving of females are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used for performance elements 6 through 9.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Calving females in need of assistance
Proper calving environment
Stall or structure to secure female if tied
Halter and rope
Obstetrical chains and handles (clean)
Mechanical calf puller with obstetrical chains
Disposable obstetrical sleeve
Warm soapy water
Paper towels
Lubricant (e.g., obstetrical soap, other mild soap or water based lubricant)

WORK TO BE PERFORMED

Assist with calving and aid in delivery and normal postnatal processes.

PERFORMANCE CRITERIA

Approximately 10% more calves survive and females have less trauma when assistance is provided promptly and as needed.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

1. Determine need for assistance, usually indicated by stage two labor in excess of two hours or partial presentation of calf without delivery.
2. Restrain female with a halter and rope by tying with a quick release knot to a secure object.
3. Clean area around vulva, using paper towels and soapy water to remove feces and other materials, recleaning as necessary.
4. Insert your hand and arm, covered by lubricated obstetrical sleeve, carefully into female's reproductive tract through vulva and vagina. (A bare arm may be used if necessary, but should be cleaned with warm, soapy water.)
5. Determine degree of cervical dilation and call for veterinary assistance if hand cannot pass through cervix or if calf cannot be felt.
6. Estimate relative size of birth canal and calf's head; call for veterinary or supervisory assistance if calf seems so large that a cesarean section may be needed.
7. Determine position of calf by palpation. (Normal presentation is hoof pads downward and nose between front legs.)
8. Determine if calf is alive by pinching it to obtain responsive movement.
9. Lubricate calf and birth canal if they are dry.

10. Assist in delivery by applying traction if calf is in a normal position or a simple breech (hind legs presented) when prompt delivery must be made to prevent suffocation.
11. Call for prompt veterinary or supervisory assistance if calf is lodged in birth canal as this poses great risk for female and calf.
12. Try to move calf back into uterus if it is necessary to attempt to reposition calf.
13. Reposition calf into normal position, if possible, or with hind legs extended if rear portion of body is presented. Use lubricant generously and take care to prevent tearing of uterine wall.
14. Apply traction for delivery, taking care to avoid hurried, rough handling.
15. Apply traction, in most cases, using an obstetrical chain as follows:
    a. Loop chain back through oval ring at end of chain.
    b. Slip gloved hand through loop and carry it into reproductive tract to calf.
    c. Place loop over cannon bone of leg, 2 or 3 inches above dewclaw.
    d. Place a second loop as a half hitch around leg just above hoof head.
    e. Arrange chain so that pull is from bottom of leg.
    f. Repeat on other leg.
    g. Attach handles to chains and apply traction gradually, moving one leg ahead slightly, then the other.
    h. Pull calf in an arc downward once its legs are exposed.
16. Consider use of a mechanical calf puller if obstetrical chain traction is not adequate, but only if so instructed and familiar with device, as females and calves are likely to be injured if use is not correct.
17. Observe females carefully for uterine prolapse or lacerations. Contact veterinarian as indicated.
18. Attempt to establish respiration in calves that are not breathing. (See Skill 20.)
19. Ensure female can stand normally after delivery, otherwise provide assistance for female to stand.
20. Observe female for passage of placenta and report to veterinarian or supervisor if placenta is retained for more than eight hours or is abnormal in appearance.
21. Remove placental membranes and burn or bury them.
22. Treat newborn according to standard farm management policies, if normal, otherwise contact supervisor or veterinarian.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Calf (or calves) and placental materials are delivered or removed from reproductive tract of female.

PROCESS

All performance elements for calving assistance are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Calving female
Newborn calves
Paper toweling or clean cloths
Properly prepared calving area
Artificial respirator

WORK TO BE PERFORMED

Establish respiration in calves that aren't breathing, usually due to prolonged delivery time, unbroken membranes or mucus that prevents breathing.

PERFORMANCE CRITERIA

All necessary steps are taken to establish breathing in newborn calves.

Skill must be performed within 30 seconds to 1 minute.

PERFORMANCE ELEMENTS

1. Observe or assist calving female, depending on need.
2. Prepare to assist in establishing respiration, especially if delivery is prolonged or if calf is presented rear legs first.
3. Remove any membranes still over calf's head.
4. Clear away any mucus in nasal passages with toweling or cloth.
5. Tickle nostrils with straw to stimulate activity and breathing.
6. Rub or slap side of calf as a stimulus if breathing does not occur promptly.
7. Lift calf by hind legs and hang over fence/gate to drain respiratory passages.
8. Blow air gently into one nostril with mouth held shut or use artificial respirator if available
9. Remove calf for later disposal if breathing is not established.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Respiration is established in newborns.

PROCESS

All performance elements for establishing respiration in newborns are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Breeding females
Newborn calves (within six hours of birth or less)
Colostrum source (e.g., dam, frozen colostrum, fermented colostrum or dried colostrum)
Nursing bottle with lamb nipple (if needed)
Stomach tube (if needed)
Vitamin supplements

WORK TO BE PERFORMED

Ensure that calf ingests adequate levels of immunoglobulins from colostrum

PERFORMANCE CRITERIA

Calves should ingest at least 100 grams of immunoglobulins from colostrum within six hours of birth in order to provide them with passive immunity to disease.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

Note: Females may be protectively aggressive. It is often helpful to have both a handler for the female (preferably experienced) and a handler for the calf. Severely deprived calves tend to die of colisepticemia in less than four days and moderately deprived calves are susceptible to diarrhea and other diseases.

1. Provide proper nutrition for pregnant females. Immunoglobulin concentrations tend to be higher in colostrum of females with better body condition scores (at least 5 for cows and 6 for heifers).
   a. Select breeding animals for ease of calving.
   b. Avoid lower calf blood concentrations of immunoglobulins caused by difficult calving and reduced calf vigor.
2. Have a backup source of colostrum on hand, such as frozen or fermented colostrum, preferably collected on your own farm.
3. Assist delivery of calves in difficult birth situations to avoid further weakening of calf.
4. Allow maternal behavior, such as licking calf, and when possible allow calf to suckle from their dams.
5. Restrain dam if necessary in order to allow calf to nurse.
6. Support weak calf, as needed, to stand.
7. Encourage reluctant calf to nurse by squirting milk from a teat into its mouth.

8. Provide vitamin supplementation to calves lacking suckling instinct.
9. Check teats and make sure they are open if calf attempts to nurse but does not seem to be swallowing.
10. Provide colostrum from another source if calf is unable to nurse from its dam for some reason (weak, orphaned or other cause), or if it's dam has lost or does not have adequate colostrum prior to calving.
11. Use alternate sources of colostrum when needed. It is more antibody specific if collected from females on your own farm, but dairy farms are often a good source. Common alternate sources include the following:
    a. Frozen: Colostrum will keep several years and can be easily frozen in quart plastic containers. Thaw carefully to about 104° F and avoid overheating or boiling.
    b. Fermented: Colostrum may be fermented by storing it at room temperature (for up to one month) in large plastic containers. It can still be used if light mold is present only on top but should be discarded if heavy molding has taken place.
    c. Dried: These sources may be reconstituted with water but tend to provide lower levels of colostrum and are usually used to supplement calves who have obtained some, but not enough immunoglobulins from another source.
12. Provide colostrum to calves not obtaining colostrum from their dams.
    a. Use a nursing bottle and lamb nipple to feed colostrum to a calf with an adequate nursing reflex; otherwise administer colostrum through a stomach tube.
    b. Provide 5% – 6% of calf's body weight (about two quarts for most calves) of colostrum shortly after birth, especially within six hours, and an equal amount at about 12 hours of age.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

All calves obtain adequate levels of immunoglobulins by ingesting colostrum within an appropriate amount of time.

PROCESS

All performance elements for ensuring availability and ingestion of colostrum are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used depending on condition of dam and calf.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Newborn calves licked dry or nearly dry by their dams
Assistant (if needed) for larger calves or to help keep animals separated
Clean scissors or knife
Antibacterial solution such as iodine
Squeeze bottle or spray bottle
String or plastic clamp
Restraint area such as a stall or barn lot

WORK TO BE PERFORMED

Apply antibacterial treatment to navel cord of newborns to prevent infection (may not be required in pasture environment).

PERFORMANCE CRITERIA

To prevent infection (navel ill), navel cords of newborns are saturated with an antibiotic/antibacterial compound as soon as possible after birth and within 24 hours.

After application, naval cord is dry within two days and drops off within 3 - 4 weeks.

Time required to complete the skill is 15 - 30 seconds after animal is restrained.

PERFORMANCE ELEMENTS

Note: Females may be protectively aggressive. It is often helpful to have both a handler for the female (preferably experienced) and a handler for the calf.

1. Assemble all application materials within reach or place in clothing pockets.
2. Separate newborn from its mother if possible.
3. Restrain newborn by
   a. Forcing it into a corner or against a wall.
   b. Straddling animal and placing its head between your knees.
   c. Using flanking technique and forcing animal onto its side. (See Skill 25.)
4. Cut off excess navel cord leaving 2 - 4 inches. Take care not to jerk or pull cord.
5. Squeeze or spray antibacterial compound into tip of navel cord and then coat outside of cord thoroughly.
6. Tie or clamp off navel cord if there is excessive bleeding or if facility has a history of navel ill.
7. Allow animals to reunite after processing procedures are complete.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Navel cords of newborns are effectively treated to prevent infection.

PROCESS

All performance elements for navel cord care are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Nursing calves
Creep feeding structure
Self-feeders, troughs or racks
Properly formulated and prepared creep feed
References for formulation (e.g., National Research Council [NRC] Nutrient *Requirements of Cattle*, veterinarian guides, etc.)

WORK TO BE PERFORMED

Feed properly formulated, palatable supplemental feed to nursing calves.

PERFORMANCE CRITERIA

Nursing calves consume creep feed, resulting in better health, less stress, greater weaning weights and less loss at weaning. (Excessive gains causing fat deposition for replacement heifers between 3 months and 9 months of age may not be favorable.)

Time required to complete the skill varies depending on number of calves supplemented.

PERFORMANCE ELEMENTS

1. Place or build creep feeder near an area where herd tends to rest.
2. Mix or purchase creep feeds that are palatable and maintain correct nutritional content.
3. Place clean feed in feeders, troughs or racks, initially using about ¼ pound of feed per calf.
4. Remove, on a daily basis, any feed left over during first week and give it to cows.
5. Increase amount of feed after first week of limit feeding and let calves self feed up to about four pounds per animal per day.
6. Limit grain consumption if necessary by adding fiber feeds such as hay, ground hay, beet pulp, cotton seed or oats.
7. Clean feeders as needed.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Nursing calves begin consumption of feed and are weaned.

PROCESS

All performance elements for creep feeding nursing calves are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle to be worked
Cattle facilities
Books and articles on cattle behavior

WORK TO BE PERFORMED

Develop and use basic understanding of cattle behavior.

PERFORMANCE CRITERIA

Handlers treat, move and handle cattle in an effective, minimally stressful manner. Injuries and losses are reduced, as is overall time required for most procedures.

Understanding behavior is an ongoing process with no time limit.

PERFORMANCE ELEMENTS

Note: Rough handling increases stress on cattle and often leads to injury and loss, sometimes death. Cattle can become excited in a matter of seconds, but it takes 20 to 30 minutes for heart rate to return to normal in severely agitated cattle. Visit the following websites for more information on cattle behavior: www.grandin.com; *www.foothill.net/~ringram/budschol.htm.*

1. Work cattle quietly and without running and excessive arm waving.
2. Do not attempt to move cattle by approaching them directly from behind.
3. Be aware of the nearly 360° panoramic vision of cattle, with a small blind spot directly behind them.
4. Design facilities to utilize or compensate for panoramic vision of cattle and install shields or solid walls and curved alleys when it is desirable to prevent viewing of people or objects.
5. Be aware of concern of cattle for areas of alternating light and shadow and their reluctance to move quickly into an area of contrast.
6. Utilize reluctance of cattle to walk over areas of alternating light and shadow by using grates, cattle guards or painted stripes as barriers to prevent cattle from crossing.
7. Avoid having alternating light and shadow over areas where cattle are to be driven such as working chutes and loading chutes.
8. Use soft lighting when night illumination is needed in areas of cattle handling such as loading.
9. Be aware of flight zone of cattle which varies from as little as five feet in very tame cattle to as much as 300 feet in range cattle.
10. Determine flight zone by gradually approaching animal until it moves away. (Deep penetration will cause animal to turn back and run or bolt past handler.)

Note: Animals may panic or become aggressive when handler invades flight zone and animal can perceive no escape. Some animals are intimidated by human eye contact and may not move easily until eye contact is broken.

11. Move out of flight zone to encourage animal to stop moving.
12. Use subtle entry into flight zone at a 45° - 60° angle to shoulder of cattle to move them forward.
13. Be aware of herding instinct of cattle (desire to join other cattle).
14. Utilize tendency of cattle to join other cattle to move them toward other cattle, and when possible, move them in small groups instead of individually.
15. Move cattle single file by allowing them to see others ahead of them or to see what appears to be an opening in a pasture situation.
16. Handle animals separated from group carefully (especially if they can still see and hear others) because animal may become aggressive or panic, charging handler or trying to jump or break through obstacles.
17. Be aware that cattle have good memories and make associations. Cattle respond well to hand/bucket feeding.
18. Keep treatment chutes and artificial insemination chutes separate since cattle associate treatment chute with discomfort or pain.
19. Feed cattle at consistent times and in a consistent order to avoid anxiety.
20. Be aware that cattle become anxious when footing is bad or at an angle.
21. Make permanent ramps no more than a 20° slope and use cleats (8" inch spacing, 1.5 – 2 inches high) on wooden ramps, or consider using roughen concrete steps (3.5 – 4 inch rise and a 12 inch tread) instead of ramps.
22. Move cattle slowly when footing is questionable, such as on a slope, in wet/frozen soil conditions or on slippery concrete.
23. Be aware that some breeds of cattle are more excitable than others.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Handlers develop and use basic understanding of cattle behavior.

PROCESS

All performance elements for developing and using basic understanding of cattle behavior are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

RESTRAIN CALVES BY FLANKING.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Calves up to 150 pounds
Pen, stall or other arrangement that provides a corner
Shepherd's crook (optional)

WORK TO BE PERFORMED

Restrain calves by flanking. .

PERFORMANCE CRITERIA

Calves are restrained by flanking for relatively short procedures. Handler weight and size will determine upper calf weight limit. Larger calves may require two handlers.

Time required to complete the skill varies depending on animal behavior, facilities and procedure. Once animal is caught, putting it to the ground by flanking takes one minute or less.

PERFORMANCE ELEMENTS

Note: A shepherd's crook can be useful for driving, cornering and/or catching a calf by the leg.

1. Approach calf quietly and drive it to a suitable location.
2. Corner calf by blocking it with your arms and legs as needed.
3. Stand close to its side and reach over calf's back.
4. Grab a hold of calf's flank with your hand near its rear quarters and your front leg at its knee.
5. Block calf at shoulder to keep it from moving forward, bend your knees for leverage and pull calf off its feet by pulling toward you.
6. Lower animal to ground as gently as possible.
7. Hold animal down by placing your knee on its flank and holding its neck down by hand. For castration purposes two handlers are needed.
8. Release hold and allow animal to rise after desired work is completed.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Calves are restrained by flanking.

PROCESS

All performance elements for restraining calves by flanking are critical and must be performed in sequence.

RESTRAIN CATTLE USING WORKING ALLEY.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle to be worked
Working alley
Handler(s)
Blocking gates
Beef Housing and Equipment Handbook

WORK TO BE PERFORMED

Restrain and direct cattle using working alley for various procedures.

PERFORMANCE CRITERIA

Cattle are restrained and directed without excess upset or injury.

Time required to complete the skill varies depending on procedure and number of cattle to be worked.

PERFORMANCE ELEMENTS

1. Design working alley to be safe and effective.
2. Use solid sides, about 50 inches high, to avoid distraction.
3. Begin solid sides about 4 inches off of ground to allow drainage and cleaning.
4. Use curved lines (minimum curve radius of 15 feet) to focus attention forward only a short distance, but still allowing animals to see several animals directly ahead.
5. Slope alley sides to narrow at feet, preventing turning around and allowing different-size cattle to be worked. For 800-1,200 pound cattle, top width should be 26 – 29 inches and bottom width should be 13-16 inches. Having adjustable sides on alley is desirable. Straight alley ways with adjustable sides will allow for working animals of different size and weight by setting width as recommended by *Beef Housing and Equipment Handbook.*
6. Have at least 20 feet of linear alley distance with bars or stops available to prevent animals from backing up.
7. Refer to *Beef Housing and Equipment Handbook* for additional construction details.
8. Use blocking gates through which cattle can see in order to avoid balking.
9. Avoid prodding an animal to move unless it has a place to go.
10. Provide an exit or cutting gate at beginning of alley or just ahead of other structure to divert cattle that are not to be processed.
11. Perform simple procedures such as applying pour-on insecticides in working alleyway or use the working alleyway to direct animals into other structures such as working chutes or loading areas.
12. Release animals or small groups when finished and bring in next animal or group.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are restrained and directed using working alley.

PROCESS

All performance elements for restraining and directing cattle using a working alley are critical and must be performed in sequence.

RESTRAIN CATTLE USING WORKING CHUTE AND HEAD GATE.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Working chute 26 - 28 inches wide (fixed or adjustable/squeeze [manual/hydraulic])
Bars (two) that can extend across working chute
One or more handlers (e.g., one driver, one operator)
Working alley (see Skill 26)
Head gate adjusted for animal size
Catch pen

WORK TO BE PERFORMED

Restrain cattle using a working chute and head gate.

PERFORMANCE CRITERIA

Animals are caught uninjured in a safe and humane manner. Skill is performed on first try 99% of the time. Unrestrained animals are caught on retry.

Time required to complete the skill depends on length of working alley and behavior of cattle being processed. Generally one minute or less is needed to restrain animal in working chute and head gate.

PERFORMANCE ELEMENTS

1. Drive cattle in single file through working alley.
2. Place a bar across working alley behind lead and last animals in order to prevent backing up.
3. Drive lead animal into working chute.
4. Close head gate (operator's job) as lead animal's ear passes through opening of head gate.
5. Urge animal forward (driver's job) if it hesitates.
6. Close head gate on animal's neck and secure handle until desired procedure is completed.
7. Place blocking bar or stop gate behind animal in working chute. If using squeeze chute, tighten squeeze chute.
8. Release pressure if using squeeze chute. Open head gate to release finished animal as second person drives it forward. Remove blocking bar or stop gate.
9. Catch next animal in head gate as animals are driven forward, following performance elements 4 through 8 as needed.
10. Allow uncaught animals to move into catch pen for return to working alley.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are restrained using working chute and head gate.

PROCESS

All performance elements for restraining cattle using a working chute and head gate are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle to be restrained
Rope halter
Stall or small pen
Personal protective equipment (PPE)
Strong support post or similar structure

WORK TO BE PERFORMED

Halter cattle for restraint.

PERFORMANCE CRITERIA

Cattle are haltered for restraint for simple, minimally stressful procedures or for additional restraint to supplement other methods such as working chutes for more demanding procedures.

Time required to complete the skill varies depending on nature of animal, size and skill of handler and size of pen/stall.

Placing a halter on a gentle, halter-broken animal takes 5 - 15 seconds, but haltering a nervous, uncooperative animal may take up to 15 minutes.

PERFORMANCE ELEMENTS

1. Put on PPE.
2. Move animal to be haltered into a small work area (stall or pen).
3. Loosen chin rope of halter to leave about two feet of slack before lead portion passes through eye-loop (area where lead slides through side section of halter).
4. Adjust nosepiece to an appropriate size for head of animal to allow it to fit just below eyes.
5. Hold top of headstall of halter in your right hand and lead portion in your left hand and keep halter close to your body.
6. Try to position yourself on animal's left side with animal between you and wall.
7. Approach animal quietly and without abrupt movement, moving forward toward shoulder in a diagonal line.
8. Stand still briefly if a nervous animal moves forward away from you, then quietly approach again until animal stands still long enough to slip on halter.
9. Slip on halter.
   a. Lift headstall over and leave chin rope under animal's neck.
   b. Place or flip nosepiece in place, then put headstall over poll and both ears.
   c. Pull lead rope to tighten halter under chin.
   d. Make sure halter is behind poll and both ears.

10. Repeat performance elements 5 through 9 calmly if animal evades halter, until it is caught.
11. Restrain gentle or small animals for simple procedures by using physical strength.
12. Restrain larger or more difficult animals by double looping rope around a sturdy support post or by tying animal using a slip knot.
13. Use halter restraint as a supplemental restraint for more difficult procedures or for procedures involving animal's head.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are haltered for restraint purposes.

PROCESS

All performance elements for using halters to restrain cattle are critical and must be performed in sequence.

CONTROL CATTLE USING NOSE LEAD, NOSE HOLD, TAIL TWIST OR TAIL HOLD.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle that need prompt, supplementary control or distraction
Nose lead with approximately 4 foot rope attached (optional)

WORK TO BE PERFORMED

Provide prompt, easily applied supplementary control or distraction of cattle.

PERFORMANCE CRITERIA

Cattle are controlled/distracted using proper safety precautions.

Time required to complete the skill is only seconds and can be maintained or reapplied until desired response occurs.

PERFORMANCE ELEMENTS

1. Determine desired method based on likely response.
2. Follow proper safety precautions. Injury can occur without proper experience and knowledge and extreme caution should be used with the performance elements that follow.
3. Use a nose lead when animal needs additional control while in squeeze chute or stanchion, as follows:
   a. Clamp your index finger in one nostril and thumb in the other.
   b. Follow motion of animal's head while clamping nose lead in place just above your finger and thumb.
   c. Wrap rope of nose lead around an adjacent pipe or post of working chute or stanchion and hold end of rope; **do not tie** it in place.
   d. Do not pull excessively hard on rope since severe damage can be done to soft tissue of animal's nose.
   e. Remove nose lead when extra restraint is no longer needed.
4. Use a nose hold for animal's safety when you need to make an animal which has gone down in a restraint situation get to its feet.
   a. Close both nostrils with palms of hands with one over each nostril and fingers pointing downward closing mouth.
   b. Follow movement of animal's head until animal gets to its feet.
   c. Release your hold as soon as animal gets up.
5. Use a tail twist when a balking animal needs to be moved forward.
   a. Stand to side of animal to prevent being kicked.
   b. Take hold of tail 8 – 12 inches away from tail head, shape it into a loop or S curve and apply steady pressure, but not so strongly as to cause damage to tail.
   c. Release tail when animal moves forward.

6. Use a tail hold when an animal needs additional control to stand still while in other restraint. (See Skill 34.)
   a. Stand to side of animal.
   b. Take hold of tail close to base, then pull it up and over the back. This is a two-hand procedure.
   c. Apply enough pressure to cause animal to stand still but not so strongly as to cause damage to animal's vertebrae or spinal cord.
   d. Release your hold as soon as procedure requiring extra restraint is completed.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are controlled using nose lead, nose hold, tail twist or tail hold.

PROCESS

All performance elements for controlling cattle using nose lead, nose hold, tail twist or tail hold are critical and must be performed in sequence within method of choice.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Restrained or confined cattle
Herd protocol
Marking chalk/paint stick
Permanent animal identification
Rectal thermometer
Chart of normal temperature and respiration ranges
Record keeping system

WORK TO BE PERFORMED

Perform general inspection of cattle to assess health status.

PERFORMANCE CRITERIA

Irregularities in health status of cattle are recorded and treatment plan identified.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

1. Look for signs of swelling in joints, limping, cuts, abrasions or drooping ears.
2. Observe for prolonged arching of back, reluctance to move or unusual movements.
3. Examine hair and hide for hairless spots, dullness or scruffiness.
4. Note abnormal behavior such as persistent rubbing or licking, extreme nervousness or lethargy or unresponsiveness.
5. Note abnormally red, pale or purple mucous membranes of eyes and/or gums.
6. Check for discharges from nose, mouth or eyes and for swelling under jaw.
7. Note any off-color or unusual smelling urine and/or excessively dry or excessively liquid feces.
8. Count animal's respirations per minute to ensure they are in normal range and rhythm (refer to chart).
9. Note any coughing, sneezing, nasal discharge or watery eyes.
10. Restrain animal if necessary.
11. Check temperature by gently inserting a rectal thermometer held in place for 1 - 2 minutes.
12. Remove thermometer gently and take reading to determine if animal has a fever.
13. Separate cattle with suspected irregularities for observation and/or treatment according to herd protocol.
14. Record and report findings to supervisor or veterinarian.

15. Treat according to diagnosis and herd protocol. Identify treated animals using permanent identification.
16. Temporary marking systems (e.g., marking chalk/paint stick) may be used to identify different treatment methods.
17. Update record keeping system noting withdrawal times specified on product label.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

A general health inspection of cattle is performed.

PROCESS

All performance elements for performing general health inspection of cattle are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Feedlot or pasture cattle
Restraint method, if needed
Poloxalene
Rope (approximately three feet) and rubber hose (12 inches)
Stomach tube (¾ - 1 inch diameter, 6 – 8 feet long, clean and flexible)
Funnel or drenching gun
Defoaming agent
Trocar and cannula or sharp pocketknife with locking blade
Speculum

WORK TO BE PERFORMED

Prevent bloat (collection of gases in rumen), if possible, recognize symptoms of bloat and apply treatment for bloat.

PERFORMANCE CRITERIA

Bloat is an uncommon but recognizable occurrence in pasture or feedlot cattle, and cattle are saved with prompt treatment of bloat.

Time required to complete the skill depends on severity of bloat and treatment needed.

PERFORMANCE ELEMENTS

Note: Puncture of rumen should be done only as a last resort.

1. Plant and manage pastures to limit legumes to 30% - 40% of total stand and/or formulate feedlot rations to prevent bloat.
2. Take caution grazing cattle on legume pastures following a frost or when starting cattle on legume pastures.
3. Discuss and plan for emergency treatment of bloat with your veterinarian or supervisor.
4. Assemble and store treatment equipment where it is readily accessible.
5. Incorporate Poloxalene, an antifoam, antibloat compound, into feedlot ration and/or feed Poloxalene 48 hours before turning animals out onto pasture.
6. Observe cattle several times daily where questionable conditions exist.
7. Observe for primary indication of bloat, distention of left (rumen) side extreme distention in severe cases.
8. Observe cattle for other symptoms, such as appearing anxious, lying on ground, struggling to breathe and kicking at belly.
9. Keep animal moving in mild cases and observe for lessening of symptoms.

10. Observe for continuing or increasing symptoms and, if they continue, attempt to contact supervisor and veterinarian.
11. Restrain animal and select from treatment methods below, unless otherwise directed, generally listed in order of progressive treatment, if symptoms persist or increase in severity.
    a. Drench animal with an appropriate defoaming agent (e.g., Rumen-eze, mineral oil). Allow 15 minutes and keep animal moving.
    b. If defoaming agents are not available, slide a short length (3 feet) of rope through a section of garden hose (about 12 inches). Place hose section in animal's mouth above tongue and tie rope behind pole tightly enough to put a few wrinkles at corners of mouth, causing animal to chew on hose. A small branch can be used if hose is not available. Saliva produced helps break up foam. Proceed to next option if animal does not begin to eructate with a decrease in rumen distention within 15 minutes.
    c. Insert speculum in mouth. Insert stomach tube through speculum to back of throat and gently push it downward as animal swallows, usually 18 inches to 3 feet, inserting more distance on larger animals. Listen for coughing as this usually indicates incorrect placement into air passages. If coughing occurs, bring tube back out and start again. Gases may be immediately released when tube enters rumen. If no gasses are released, blow into tube and listen for gurgling noises and/or smell for stomach gas. When it is apparent that tube is in rumen, administer defoaming agent through tube by means of a funnel or drenching gun.
    d. Observe animal for worsening of symptoms, such as severe respiratory distress and lying down. If symptoms worsen, puncture rumen as a last resort. Use a trocar to puncture rumen. Place trocar midway between last rib and hook (hipbone) and 3 - 4 inches below transverse process of lumbar vertebrae (loin) on animal's left side. Hold trocar in place with left hand and strike it sharply with right hand at an angle toward foreleg on opposite side. Stand back to avoid escaping gases or rumen fluid.
    e. Use a sharp pocketknife if a trocar is unavailable or does not allow enough material to escape. Make incision vertically at site described, up to three or four inches in length if needed.
    f. Keep rumen aligned with opening in side by inserting a finger or a cannula until gas or foam stops escaping.
12. Move animal to a small pen or stall after treatment and check at 30 - minute intervals for 3 - 4 hours with longer observation intervals thereafter.
13. Feed high fiber feed for 2 - 3 days and gradually return animal to its normal ration within 7 - 10 days, at which time it may be returned to main group.
14. Reevaluate management practices and feed rations if a chronic bloat problem exists.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Incidence of bloat is reduced and bloated cattle are treated and saved.

PROCESS

All performance elements for recognizing and managing bloat are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Restrained bull calves less than one month old
Elastrator
Elastrator bands
Tetanus antitoxin
Needles (1½ inches by 19 or 20 gauge)
Syringe

WORK TO BE PERFORMED

Castrate young bulls using elastrator bands.

PERFORMANCE CRITERIA

Bulls are castrated by bands without creating open wounds. Atrophied tissue drops away within a few weeks.

Time required for banding restrained bull calves is two minutes or less.

PERFORMANCE ELEMENTS

1. Place equipment and tetanus antitoxin within easy working distance.
2. Palpate scrotum to determine the presence of both testicles and normal condition of associated tissues; continue with normal animals.
3. Place a band on elastrator prongs, cup hand over band and prime band by opening and closing handles several times.
4. Open band by squeezing handle and position band at base of scrotum.
5. Grasp scrotum and testicles with other hand and pull through stretched band while moving band toward body.
6. Make sure both testicles are worked completely through band, with band placed near body.
7. Release band onto scrotum above testicles.
8. Check to make sure that both testicles are below band. If not, cut band with a sharp knife and repeat performance elements 3 through 7.
9. Inject tetanus antitoxin in neck muscle by using needle and syringe.
10. Release animal and allow it to return to its dam.
11. Observe for atrophy of testicles during next few weeks as indication of successful castration.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Bull calves are castrated nonsurgically with bands.

PROCESS

All performance elements for nonsurgically castrating bulls with bands are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Restrained bull(s) to be castrated
Emasculatome
Assistant
Marking chalk/paint stick

WORK TO BE PERFORMED

Castrate bulls nonsurgically using an emasculatome.

PERFORMANCE CRITERIA

Bulls are castrated by crushing spermatic cord without creating an open wound or other damage to scrotum.

Time required for restraint varies according to method, size of animal and animal behavior.

Time required for castration procedure is 4 - 6 minutes.

PERFORMANCE ELEMENTS

Note: This procedure should be done under supervision until adequate skills have been developed.

1. Assemble equipment.
2. Hold restrained animal's tail utilizing tail hold technique (see Skill 29) over its back for duration of procedures.
3. Palpate scrotum to determine presence of both testicles and normal condition of associated tissues; continue with normal animals.
4. Mark animals with retained testicles or abnormalities for later examination and remove from castration group.
5. Apply pressure with thumb and fingers to work one testicle down to base of scrotum and to maneuver spermatic cord to outer edge of scrotum.
6. Open emasculatome. Bring it from outside of scrotum, then position it with plier jaws portion two inches above top of testicle, taking care to avoid center septum of scrotum.
7. Bring jaws of emasculatome together and verify position.
8. Apply pressure to emasulatome handles with both hands (leg pressure may be used to assist) and squeeze tightly for about 30 seconds.
9. Palpate to make sure cord is between jaws; repeat performance elements 5 through 8 if cord has been missed.

10. Release pressure and reapply emasculatome for a second crushing ¼ - ½ inch below first effective site.
11. Perform performance elements 5 - 10 on opposite side.
12. Release pressure, massage testicles to separate cord, set emasculatome aside and release animal.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Bulls are castrated nonsurgically with emasculatome.

PROCESS

All performance elements for nonsurgically castrating bulls using emasculatome are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Restrained bulls under 10 months old
Assistant
Facility protocol
Clean holding area
Sterilized scalpel or sharp knife
Sterilized hemostats or dull knife or emasculator
Disinfectant-filled tray
Antiseptic soap
Antiseptic powder or spray
Needle, 1 ½ inches by 18 gauge
Syringe
Tetanus antitoxin
Insect repellant
Penicillin

WORK TO BE PERFORMED

Castrate bulls surgically.

PERFORMANCE CRITERIA

Bull is castrated with minimal stress and without loss of life.

Time required to complete the skill after restraint is 5 - 15 minutes, with typically shorter times required for younger animals and longer times for older animals.

PERFORMANCE ELEMENTS

Note: This procedure should be done under supervision until adequate skills have been developed.

1. Assemble equipment within easy reach.
2. Hold restrained animal's tail utilizing tail hold technique (see Skill 29) over its back until castration is complete.
3. Palpate scrotum to determine presence of both testicles and normal condition of associated tissues; continue with normal animals.
4. Mark animals with retained testicles or abnormalities for later examination by veterinarian or supervisor and remove from castration group.
5. Wash scrotum and your hands with antiseptic soap.
6. Maintain cleanliness.

7. Use scalpel or sharp knife to open scrotum by one of the following methods:
   a. Hold lower third of scrotum and push testicles upward, then cut away lower third of scrotum, leaving bottom of testicles exposed.
   b. Press testicles, one at a time, toward outside of scrotum, then make an incision along each side, extending incision to bottom of scrotum.
8. Place scalpel or knife in disinfectant tray.
9. Pull one testicle down with one hand and use other hand to separate testicle and spermatic cord from surrounding tissue.
10. Pull testicle downward while gently pushing index finger and thumb of other hand up spermatic cord until it separates from all tissue but spermatic cord.
11. Separate testicle from spermatic cord by one of the following methods:
    a. Place hemostat on cord 1 - 2 inches above testicle and crush it, repeating along cord several times. Leave hemostat on cord. Hold cord with index finger and thumb of one hand just below hemostat and pull downward with other hand, using a steady pressure against hold above pulling hand, until cord breaks and testicle is removed.
    b. Pull testicle with one hand and scrape up and down cord with dull knife until it breaks through and testicle is freed.
    c. Pull downward on cord and use other hand to place an emasculator as far as possible up cord. Position crushing part of emasculator toward body and cutting part toward testicle; squeeze handles together and hold for 10 - 15 seconds.
12. Repeat performance elements 9 through 11 for the second testicle.
13. Apply antiseptic to incisions, including well into scrotum.
14. Inject tetanus antitoxin and penicillin into neck muscle with needles and syringes and spray area with insect repellant.
15. Release animal into a clean, dry area appropriate for resting where it can be observed.
16. Return bull calves to their dams as soon as blood clots normally; return older animals to usual housing.
17. Contact supervisor or veterinarian if excess bleeding occurs.
18. Repeat performance elements until all bulls in group to be processed are castrated.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Bulls are surgically castrated.

PROCESS

All performance elements for surgically castrating bulls are critical; however, performance element selection will vary according to facility protocol.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Restrained and healthy cattle
Needles and syringes (size based on volume of vaccine and animal size/age)
Vaccines (based on herd health protocol)
Proper handling/storage container
Permanent animal identification
Dosage chart including method recommendations
Record keeping system
Marking chalk/paint stick

WORK TO BE PERFORMED

Administer disease-preventing vaccines to cattle.

PERFORMANCE CRITERIA

Correct dosage of vaccine is administered according to size, physiological state and age of cattle, and in an approved manner.

Time required to complete the skill is 30 seconds per animal.

PERFORMANCE ELEMENTS

1. Assemble vaccine, correct size of needle and syringe to be used and marking chalk and place within easy reach (based on veterinarian's or supervisor's directions and/or manufacturer's directions).
2. Determine dosage and method of administration according to manufacturer's, veterinarian's or supervisor's directions.
3. Utilize proper storage and handling techniques to prevent damage from exposure to sunlight and temperature extremes.
4. Mix vaccine contents thoroughly by gently agitating bottle according to label.
5. Pull plunger on syringe down to a level equal to amount of vaccine being removed. (Fill and set dosage for automatic syringe.)
6. Insert needle into rubber stopper in top of bottle, with bottle in an upright position.
7. Push plunger in to force air into bottle.
8. Invert bottle and syringe.
9. Pull plunger down slowly until liquid reaches appropriate dosage on syringe (or fills automatic syringe).
10. Turn bottle right side up and remove syringe and needle.
11. Invert needle and syringe and tap side of syringe gently to force air bubbles to needle's end.
12. Push plunger in until no air remains in needle or syringe and liquid can be seen at tip of needle.

13. Determine desired type of vaccine administration and proceed to vaccinate animal. (Needles should be changed between each injection.)
    a. Intramuscular
        1) Select a site in neck muscle.
        2) Insert needle firmly into muscle, taking care to avoid spine.
        3) Slowly depress plunger until all vaccine is forced out (or until proper dosage in automatic syringe is administered).
    b. Subcutaneous
        1) Pinch up skin adjacent to injection site. Insert needle almost parallel to skin, sliding it between skin and muscle or fat.
        2) Depress plunger until all vaccine is forced out.
    c. Intranasal
        1. Remove needle and use an applicator tip once product has been drawn into syringe.
        2. Hold animal's head and inject product into nasal passage.
14. Place paint stick mark on animal to indicate it has been vaccinated.
15. Release vaccinated animal and proceed to next animal.
16. Record proper records of individual animals vaccinated as per permanent identification.
17. Dispose of needles and other materials properly.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are vaccinated.

PROCESS

All performance elements for vaccine administration to cattle are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Restrained cattle (see performance area "Restraint and Behavior")
Needle and syringe (size depends on product used and animal size)
Medication/product
Record keeping system
Marking chalk/paint stick
Manufacturer's instructions
Herd health protocol

WORK TO BE PERFORMED

Treat cattle with needed injections.

PERFORMANCE CRITERIA

Treatment is administered using recommended method. Dosage of correct medication/product is calculated based on weight, age and type of cattle.

Time required to complete the skill is one minute.

PERFORMANCE ELEMENTS

1. Assemble product to be administered, correct size of needle and syringe to be used and marking chalk and place within easy reach.
2. Determine proper dosage and method of administration.
3. Pull plunger on syringe down to level equal to amount of medication being removed.
4. Agitate product bottle gently to thoroughly mix contents.
5. Insert needle into rubber stopper in top of bottle while bottle is in upright position.
6. Push plunger in to force air in syringe into bottle (rigid plastic or glass).
7. Invert bottle and syringe.
8. Pull plunger down slowly until liquid reaches appropriate dosage indicated on syringe.
9. Turn bottle right side up and remove syringe and needle. Note: Extraction needle should be left in place for multiple use.
10. Invert needle and syringe and tap side of syringe gently to force air bubbles to needle's end.
11. Push plunger in until no air remains in needle or syringe and liquid can be seen at tip of needle.
12. Prepare to make adjustments for movement of restrained animal.

13. Select appropriate injection method and site. See Appendix A - Injection Site
    a. Intramuscular
        1) Insert needle firmly in neck muscle, making sure to avoid spine.
        2) Draw back gently on syringe plunger to make sure needle is not placed intravenously; if blood is present, redirect needle.
        3) Depress plunger until medication is forced out.
    b. Subcutaneous
        1) Select a clean site on neck or shoulders where skin is loose.
        2) Lift skin and slip needle between skin and muscle or fat.
        3) Draw back gently on syringe plunger to make sure needle is not placed intravenously; if blood is present, redirect needle.
        4) Depress plunger until medication is forced out.
14. Mark and release animal.
15. Repeat performance elements 3 through 14 until all cattle in treatment group are done.
16. Record proper records of individual animals treated as per permanent identification.
17. Dispose of needles and syringes according to manufacturer's instructions and/or farm protocol.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle receive correct medication/supplements intramuscularly or subcutaneously.

PROCESS

All performance elements for giving other intramuscular or subcutaneous injections are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Restrained cattle (See Performance Area Restraint and Behavior)
Gauze pads or clean paper toweling
Antiseptic or topical antibiotic
Antibacterial soap
Warm water in a clean container
Saline solution
Petroleum jelly
Gauze, cotton, or elastic bandage material
Insecticide

WORK TO BE PERFORMED

Clean and treat minor cuts and abrasions.

PERFORMANCE CRITERIA

Wound is properly cleaned and heals quickly without infection.

Time required to complete the skill is 1 - 5 minutes.

PERFORMANCE ELEMENTS

1. Position animal to allow safe access to area to be treated.
2. Examine wound and determine apparent seriousness; continue if minor.
3. Contact supervisor or veterinarian if injury seems severe.
4. Place a few drops of antibacterial soap per ½ gallon of warm water.
5. Dip gauze or paper towel in warm soapy water and wash wound area thoroughly.
6. Flush with saline solution if needed.
7. Cover wound and surrounding area completely with antiseptic spray, liquid or salve.
8. Protect surrounding area with petroleum jelly and/or bandage if needed.
9. Apply insecticide on surrounding area during insect season.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Minor wounds are treated.

PROCESS

All performance elements for treating minor wounds are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Implant gun, including sharp needles
Directions for implant gun use
Implant pellets
Cotton
Antiseptic
Second handler for animals over 150 pounds
Squeeze chute with head gate and nose bar
Nose lead
Herd health protocol
Material for recording information

WORK TO BE PERFORMED

Place implants in ears of cattle.

PERFORMANCE CRITERIA

Desired implant pellets are placed between skin and cartilage of ear in correct site for specific implant without puncture of blood vessels or going through ear.

Time required to restrain animal varies according to animal behavior and size. Time required to implant a restrained animal is 30 seconds to 2 minutes.

PERFORMANCE ELEMENTS

1. Select appropriate restraint method.
   a. Cattle under 150 pounds may be restrained by hand.
   b. Larger cattle need squeeze chutes and head gates with nose bars or a nose lead.
2. Select ear to be used and record this information, along with type of implant, and plan to switch sides for any subsequent implant.
3. Prepare implant gun according to manufacturer's directions.
   a. Insert implant cartridge.
   b. Insert clean, sharp needle.
4. Set implant gun aside in a safe, easy to reach place.
5. Restrain animal.
6. Clean implant site on back of ear with antiseptic (usually along midline of ear or slightly lower, in middle 1/3 of the ear between skin and cartilage).
7. Restrict animal's head to prevent movement.
8. Pick up implant gun and adjust needle and cartridge so needle can be placed next to ear, along its long axis.

9. Clean needle with antiseptic before beginning insertion.
10. Hold implant gun in one hand and tip or middle of ear in other hand.
11. Place thumb outside ear and fingers inside ear for a secure hold; position fingers so that needle may rest across forefinger but not in position to allow puncture.
12. Place needle on back of ear parallel to its length with point against ear and bevel up toward handler.
13. Use fingers inside ear to support barrel of needle.
14. Bend ear slightly away from needle and push tip under skin; then slowly and steadily push needle in up to its hub, between skin and cartilage. Take care not to push needle through ear.
15. Back needle out length of pellet(s), then squeeze trigger of implant gun to insert implant pellet(s).
16. Withdraw needle with trigger still under pressure.
17. Feel skin at implant site to determine if implant is in place.
18. Repeat performance elements 11 through 17 if pellet is not in place (usually lost due to piercing ear).
19. Record proper records of individual animals implanted as per permanent identification.
20. Release animal upon completion.
21. Repeat performance elements 4 through 20 until group is implanted, replacing cartridge and needle as needed.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle receive properly placed implants.

PROCESS

All performance elements for implanting cattle are critical and must be performed in sequence.

DEHORN YOUNG CATTLE.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Young calves (up to eight months of age)
Restraint method (see performance area "Restraint and Behavior")
Clean dehorning tools (e.g., electric dehorner, hot iron; spoon, tube or knife; Barnes-type dehorner)
Scissors or clippers
Cauterizing tool or forceps or tweezers.
Antiseptic
Petroleum jelly
Soapy water
Local anesthetic (optional)
Gloves, as needed
Insecticide

WORK TO BE PERFORMED

Dehorn young cattle up to eight months of age.

PERFORMANCE CRITERIA

Horns do not grow back and blood loss is minimal. No additional loss or injury to cattle occurs.

Time required to complete the skill varies depending on restraint required, calf size and method used but typically takes 5 – 10 minutes.

PERFORMANCE ELEMENTS

1. Determine method of dehorning based on age of calf, materials available, and facility protocol.
2. Assemble clean and disinfected materials and/or equipment to be used.
3. Proceed as follows, depending on method; use insecticide as needed.
   a. Use electric dehorner, hot iron, on calves less than four weeks of age, hot iron on calves up to four months of age.
      1) Heat dehorner or irons, according to manufacturer's directions.
      2) Restrain calf so its head is secured, use working chute and head and nose bar for larger animals.
      3) Apply dehorner or iron to horn button until skin around base turns copper colored, usually 10 - 20 seconds.
      4) Repeat performance elements 1) through 3) for other horn.
      5) Release calf.

b. Use spoon, tube or knife for calves under 60 days of age with horns ½ inch or less.
   1) Restrain calf and secure its head.
   2) Clean area of and around horn with soapy water or an antiseptic.
   3) Use tube, spoon or knife to go about ¼ - ½ inch below surface of skin and below horn, taking about 1/8 inch of skin from perimeter of horn as well.
   4) Remove horn and surrounding tissue and discard it.
   5) Cauterize treatment site.
   6) Apply an antiseptic to horn area.
   7) Repeat performance elements 1) through 6) for remaining horn.
   8) Release calf.

c. Use Barnes-type dehorner on cattle from 4 - 8 months of age.
   1) Sterilize dehorner and forceps or tweezers and use sterile cotton.
   2) Restrain calf and secure its head.
   3) Place dehorner over horn and against skull of animal, holding handles together.
   4) Place dehorner blades far enough apart to encompass a perimeter of hide and hair about ¼ to ½ inch around horn.
   5) Hold blades against head, over horn, and quickly press handles outward causing blades to remove horn.
   6) Cauterize treatment site or use forceps or tweezers to pull horn artery out of site.
   7) Twist and pull artery out until it breaks off within soft tissue if not cauterizing.
   8) Apply antiseptic and cover exposed cavity with sterile cotton.
   9) Repeat performance elements 2) through 8) for remaining horn.
   10) Release animal into observation area.
   11) Observe for excessive bleeding, restrain and apply pressure bandages if needed.
   12) Continue to periodically observe.
   13) Use antibiotics and antiseptics if needed for infection.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Young cattle (eight months of age or less) are dehorned.

PROCESS

All performance elements for dehorning young cattle are critical and must be performed in sequence within method of choice.

DEHORN OR REMOVE HORN TIPS FROM OLDER CATTLE.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Horned cattle over eight months of age
Restraint method (see performance area "Restraint and Behavior")
Scalpel blade and handle
Clippers, saws or Gigli wire and handles
Local anesthesia
Forceps
Antiseptic
Sterile cotton
Insecticide
Cauterizing equipment

WORK TO BE PERFORMED

Dehorn or remove horn tips from older cattle.

PERFORMANCE CRITERIA

Horns or horn tips are removed with minimal blood loss, and any secondary problems are noted and treated.

Time required to complete the skill varies depending on size of horns and experience of technician, but usually takes 10 - 20 minutes per animal.

PERFORMANCE ELEMENTS

Note: Seek advice from supervisor or veterinarian regarding appropriateness of dehorning when horns are firmly attached and over four inches long.

1. Place materials to be used within reach of restraint chute.
2. Restrain animal to be dehorned or tipped in a chute with head gate and nose bar, if possible.
3. Administer local anesthesia to tissue at base of horn.
4. Determine dehorning or tipping tool to be used. Clippers may be used for animals under two years of age. Saws or Gigli wire should be used for older cattle or any cattle with hard, brittle horns.
   a. Position clippers over horn to cut deep enough to remove a ring of skin around horn as well as horn, and squeeze handles together until horn is removed.
   b. Place saw at base of horn, including a small (about ¼ inch) ring of skin, and saw horn off.

c. Use Gigli wire.
   1) Use a scalpel to make incision in skin around base of horn leaving a ¼ inch ring of skin attached to base of horn.
   2) Place handles on a length of Gigli wire and place wire in skin incision at base of horn and bring handles together.
   3) Grasp handles and, using an alternating pulling motion with each hand, saw through base of horn making sure to stay close to head and follow contour.
   4) Repeat performance elements 1) through 3) for opposite horn.
5. Be prepared to immediately see bleeding, especially when using clippers, as there is a strong blood supply to horns.
6. Cauterize treatment site or immediately take up forceps, grasp artery, then pull it out with a twisting motion to cause it to break off within deep tissue in order to reduce bleeding.
7. Apply antiseptic to wound and place a thin layer of cotton over exposed horn sinus; apply insecticide during insect season.
8. Repeat performance elements 3 through 7 for other horn.
9. Release animal and frequently observe.
10. Repeat performance elements 2 through 9 for any other cattle to be dehorned.
11. If cattle show heavy bleeding, especially if spurting, restrain as before and pull any arteries visible and/or recauterize.
12. House and feed animals in a relatively dust and chaff-free environment for several days; avoid use of feeding structures that may cause cattle to rub horn sinuses.
13. Treat or call for assistance from supervisor or veterinarian if signs of infection or pest infestation are seen.
14. Release cattle from close observation after several days, but observe them frequently until healing is complete.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are dehorned or horn tips are removed.

PROCESS

All performance elements for dehorning or removing horn tips from older cattle are critical and must be performed in sequence.

WEIGH WITH LIVESTOCK SCALES.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Livestock scales
Working alley, chute or halter
Assistant (if needed)
Recording materials

WORK TO BE PERFORMED

Weigh and record weight of cattle.

PERFORMANCE CRITERIA

Cattle weights are determined without injury to animal or handlers.

Time required to weigh animals is 15 - 45 seconds depending on animal behavior. Setup time varies considerably.

PERFORMANCE ELEMENTS

1. Arrange a working alley or chute to lead to a livestock scale.
2. Check scale platform to make sure it can move freely.
3. Remove debris from scale, including around and under platform.
4. Repair scale or platform if needed.
5. Place recording materials within easy access.
6. Move animals into working alley or chute.
7. Adjust scale to zero before moving cattle onto platform; place a known weight on scale to determine accuracy. Readjust as needed according to manufacturer's recommendations.
8. Open scale door and move first animal onto scale.
9. Close scale door and allow animal to settle on scale. An assistant may help if needed.
10. Determine an approximate average weight if animal continues to move excessively.
11. Record weight and animal identification number (if needed).
12. Open exit door and allow animal to exit.
13. Repeat performance elements 7 through 12 for each animal.
14. Readjust scales between groups of animals if mud and/or manure build up or as otherwise needed.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are weighed and weight is recorded.

PROCESS

All performance elements for weighing cattle are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Sorting alley, corral or lot
Working alley
Scales
Squeeze chute (optional)
Multiple-dose syringe (optional)
Sterile needles, 1 inch, 14 gauge (optional)
Vaccines (optional)
Small pastures or paddocks
Record keeping materials

WORK TO BE PERFORMED

Wean calves from their dams, usually at 4 - 8 months of age.

PERFORMANCE CRITERIA

Calves and cows are separated with minimum stress and little weight loss.

Time required to complete the skill varies depending on degree of preconditioning and farm procedure protocol.

PERFORMANCE ELEMENTS

1. Minimize stress on calves by performing such procedures (often referred to as preconditioning) as dehorning, castrating, primary vaccination and implanting, treatment for parasites, branding, ear tagging and creep feeding prior to weaning.
   Note: While some producers do all or many of these procedures at weaning, it is very stressful to calf and usually results in severe weight loss.
2. Consider need for early weaning when pasture is no longer sufficient as a food source, or to rebreed cows sooner. (Early weaning is most commonly used when condition of dam is declining rapidly and is usually seen in first-calf heifers.)
3. Creep feed calves according to farm protocol.
4. Assemble all equipment and record keeping materials.
5. Perform desired calf processing procedures not already done at this time, especially vaccinations, while holding the group, or immediately after separation.
6. Move cattle into sorting alley, corral or lot.
7. Sort cows from calves and return cows to a pasture out of sight of calves and preferably out of hearing range.

8. Take care to handle cattle quietly and gently, while using caution, as cows may make strong efforts to return to their calves.
9. Process any calves to be worked on through working alley and squeeze as needed, including weighing as individual animals or contemporary groups.
10. Record processing information.
11. Return calves to familiar weaning pasture or paddock.
12. Provide free choice high quality grass or grass-alfalfa hay, incorporating starter grain ration (used in creep) on second day.
13. Check calves frequently.
14. Observe for droopy ears, runny noses or eyes, coughs or mucus discharge. (Weaning stress often leads to respiratory infections.)
15. Sort out any calves that seem ill and take their temperature.
16. Check with supervisor or veterinarian for directions for treatment of calves with elevated temperatures, and follow their directions.
17. Record findings and treatment procedures.
18. Continue to observe all calves, but especially those whose health is questionable.
19. Move to usual farm facilities after cows and calves are adjusted to weaning.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Calves are weaned from their dams.

PROCESS

All performance elements for weaning calves are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Restraint method, usually a working or squeeze chute with headgate and tailgate (see performance area "Restraint and Behavior")
Clean copper or copper alloy branding irons
Liquid nitrogen or dry ice and isopropyl alcohol
Styrofoam cooler, sturdy or placed inside a stronger container
Squeeze bottle
Electric or hand clippers
Stiff-bristled brush
Clock or watch with seconds displayed
Gloves, insulated leather

WORK TO BE PERFORMED

Freeze brand cattle to damage color-producing cells, leaving brand as white hair, or, if extended, as bald scars.

PERFORMANCE CRITERIA

Cattle are permanently identified using freeze branding. Brands are clearly readable as white hair or bald scars.

Time required for restraint varies. Application time varies (20 – 60 seconds) depending on the following factors: cooling method, freeze brand alloy, age, breed of animal, season of year (summer hair vs. winter hair), closeness of clip and need for reapplication.

PERFORMANCE ELEMENTS

1. Select correct size brander, usually 4 by 3 inches for calves and 6 by 3 ½ inches for older cattle.
2. Assemble equipment within reach of handler in restraint area.
3. Prepare refrigerant and add additional coolant as needed.
   a. Liquid nitrogen: Place 3 – 4 inches of liquid nitrogen in a styrofoam cooler, usually about 5 liters to brand 20 cattle.
   b. Dry ice and isopropyl alcohol: Place about one pound of dry ice per head of cattle up to about 20 pounds initially in a styrofoam cooler; add about one gallon of 99% strength isopropyl alcohol.
4. Place branding irons in refrigerant and leave to cool until coolant stops boiling around iron, indicating that iron is now as cold as refrigerant.
5. Fill squeeze bottle with alcohol; refill as needed.
6. Move animal to be branded into chute, using a headgate and a tailgate, and if necessary, drop a sidebar to more easily reach branding site (usually the hip).

7. Clip area to be branded as close as possible, removing hair and undercoat.
8. Use stiff brush if needed to clean branding site of dirt, hair and debris.
9. Soak branding site with alcohol from squeeze bottle.
10. Put on insulated leather gloves and carefully take appropriate iron out of refrigerant.
11. Use caution handling irons and refrigerant as extreme cold will damage skin and other tissue.
12. Apply branding iron to clipped, alcohol prepared area and apply pressure to branding iron by leaning on it.
13. Be prepared to compensate for movement of animal which generally stops after nerves at site are frozen, about ten seconds.
14. Leave branding iron on site for appropriate amount of time.
15. Apply one branding iron at a time and try to avoid need to retouch which may lead to an unclear brand.
16. Return iron to refrigerant, refilling as needed to make sure liquid is over brand portion of iron.
17. Release tension on chute and open headgate to allow branded animal to exit.
18. Open tailgate and move next animal into chute and proceed with performance elements 6 through 18 until all cattle are branded.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are freeze branded.

PROCESS

All performance elements for freeze branding cattle are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Restraint method, usually a squeeze chute with a headgate and tailgate (see performance area "Restraint and Behavior")
Clean branding irons (steel or iron) with the following equipment:
Small propane tank with burner or wood fire
30-gallon drum
Electric irons
Gloves, insulated leather
Wire brush
Wound spray
Insecticide

WORK TO BE PERFORMED

Hot brand cattle to leave a permanent bald scar for identification.

PERFORMANCE CRITERIA

Cattle are permanently identified using hot branding. Hair follicles are destroyed to leave clearly readable, permanent bald scar.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

1. Select correct size branding iron, usually 4 by 3 inches for calves and 6 by 3 ½ inches for older cattle.
2. Assemble equipment and heat source within easy access for handler.
3. Prepare heat source, either red-hot coals of a wood fire or a propane burner, with heat directed into a 30-gallon drum with one open end, and insert irons or use heated electric branding irons.
4. Restrain first animal to be branded, using squeeze chute, headgate and tailgate, making sure tailgate is closed behind animal to be branded.
5. Drop squeeze chute side bar if needed to access branding site (usually the hip).
6. Put on insulated gloves and take one branding iron out of heat source.
7. Check iron to make sure it is correct, and if heated in a heat source, check color to estimate temperature. (It should be a dull gray instead of black which is too cool, or red which is too hot.)
8. Adjust heat source if needed, or allow irons to be heated longer or cool as needed before applying to hide of cattle.
9. Press iron firmly and with a gentle variation of pressure against hide at brand site to obtain uniform application of entire brand character, usually 5 - 7 seconds.

10. Take care not to smudge brand by movement.
11. Do not leave iron against hide too long as this will cause unnecessary pain and a more damaged hide.
12. Observe hide for color with a tan-brown color being desired and maintained; increase or reduce time needed to produce this color on subsequent cattle.
13. Place iron back in heat source and clean with wire brush as needed if hair doesn't burn off.
14. Apply additional irons as needed, one at a time, until brand is complete.
15. Release pressure on squeeze chute, open headgate and allow branded animal to exit.
16. Open tailgate and move next animal into squeeze chute.
17. Repeat performance elements 4 through 16 until all cattle are branded.
18. Inspect brands within first week and spray topical wound spray on any that appear raw or infected; use insecticide as needed.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are hot iron branded.

PROCESS

All performance elements for hot branding cattle are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Restrained cattle (see performance area "Restraint and Behavior")
Ear tags
Ear tag applicator, disinfected and cleaned
Disinfectant/antiseptic
Cotton swabs
Ink or pen for marking tag (if needed)
Container for ear tags
Record keeping system
Insecticide

WORK TO BE PERFORMED

Insert ear tags for identification purposes.

PERFORMANCE CRITERIA

Ear tags are placed in identified location with minimal bleeding and no subsequent infection.

Time required to complete the skill is 1 - 3 minutes per animal.

PERFORMANCE ELEMENTS

1. Place all ear tags within handler's reach and within working distance of restrained cattle, and maintain cleanliness.
2. Label tags unless preprinted for identification.
3. Insert tag into applicator.
4. Use disinfectant/antiseptic on cotton swab to clean tagging site in ear; select area free of blood vessels between cartilage ridges and approximately halfway into ear.
5. Stretch ear tight and hold it for tag application.
6. Use quick and accurate process to insert tag with numbered side forward (readable from front of animal), and insert according to manufacturer's directions.
7. Treat pierced ear with antiseptic spray; use insecticide as needed.
8. Disinfect ear tag applicator between each use.
9. Record number as needed for identification.
10. Release animal and return to selected housing.
11. Observe animals daily for a few days; watch for signs of infection.
12. Treat with antibiotics if an infection appears severe or persists for several days. Normal healing should occur in 10 days or less.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Ear tag is inserted for identification.

PROCESS

All performance elements for ear tag insertion are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Restraint method, usually a squeeze chute with a headgate and nose bar (see performance area "Restraint and Behavior")
Tattooing pliers
Tattooing numbers and/or letters
Tattoo ink and applicator
Alcohol
Viricidal disinfectant
Clean cloth or soft paper towels
Cardboard
Recording materials

WORK TO BE PERFORMED

Place identifying tattoos in ears of cattle.

PERFORMANCE CRITERIA

Tattoos are readable and correctly placed.

Time required for tattooing is usually 3 - 5 minutes.

PERFORMANCE ELEMENTS

1. Determine identification code and ear to be used.
2. Assemble equipment to be used within easy access for handler.
3. Place characters (dies) in tattooing pliers, generally limited to five numbers or less, in proper order. (They should appear backward.)
4. Test sequence by pressing tattoo dies together on a piece of cardboard.
5. Record identification information.
6. Restrain animal to be tattooed. Calves can be flanked and restrained, but animals over two months of age generally need to be held in a squeeze chute with a headgate and a nose bar.
7. Clean inside of ear with a clean cloth or soft paper towel soaked in alcohol in order to prevent infections.
8. Position tattooing pliers over upper third of ear, avoiding hair borders, between top edge of ear and first cartilage and equidistant from base of ear and its tip.
9. Squeeze handles of tattooing pliers together tightly and quickly so needle-like teeth of dies pierce ear.
10. Release plier handles fully and remove dies from ear.

PERFORMANCE ASSESSMENT CRITERIA

11. Hold ear and thoroughly apply ink, using applicator, to needle marks in ear, making sure ink penetrates (often by rubbing or using a brush).
12. Release animal.
13. Clean tattooing equipment with viricidal disinfectant after each application.
14. Repeat performance elements 3 through 13 until all cattle are tattooed.

PRODUCT

Cattle receive readable ear tattoos for identification purposes.

PROCESS

All performance elements for tattooing cattle are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Restraint method, usually a working or squeeze chute (see performance area "Restraint and Behavior")
Microchips (transponders), microchip implanted ear tags, bar coded ear or neck tags or rumen capsules.
Microchip or bar code reader
Application devices

WORK TO BE PERFORMED

Use electronic identification to identify cattle.

PERFORMANCE CRITERIA

Electronic identification devices are properly inserted/implanted into specific body sites and are readable.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

1. Determine which of the following systems seems appropriate for intended use.
   a. Microchip "button" ear tag: This transponder is a component of an external ear tag and is inserted in usual manner.
   b. Rumen capsule: Encased in a ceramic compound, this transponder is weighted to remain in rumen and is inserted into rumen using an applicator gun.
   c. Bar code ear tags: Ink jetted bar codes are printed on ear tags and can be inserted in standard manner.
   d. Neck tag microchips or bar code tags: These are placed in or on a tag which is then placed on a chain or strap around neck.
2. Restrain animal in a manner that allows safe access to appropriate body part.
3. Insert/apply microchip or imprinted bar code tag in appropriate site.
4. Read microchip transponder or bar code by using an appropriate reader, usually hand held. In the case of the transponder, the reader sends a signal to the transponder that supplies energy needed for the transponder to send a message back to the reader.
5. Connect identity code to a database in order to enter and keep detailed records accessible at any time system is put into use.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are electronically identified.

PROCESS

All performance elements for utilizing electronic identification are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Herd health protocol
Working chute or alley
Deworming products appropriate for size and type of cattle (feed or mineral additives, bolus, water soluble compounds, injectable compounds, pour-ons)
Drenching syringe (optional)
Paste administration gun
Balling (bolus) gun (optional)
Needle and syringe (if injectable)
Delivery system for feed and water
Marking chalk/paint stick
Protective gloves (if needed)
Indiana Beef Quality Assessment (BQA) Handbook

WORK TO BE PERFORMED

Treat cattle to remove/reduce internal parasites.

PERFORMANCE CRITERIA

Cattle are effectively treated to remove/reduce internal parasites; health and production are improved.

Time required to complete the skill is 30 seconds to 1 minute per animal for injections, bolus, drench or pour-on. Feed additive or water soluble products are ingested when feed or water is consumed.

PERFORMANCE ELEMENTS

1. Identify required dosage and delivery method of product.
   a. Oral paste
      1) Restrain cattle.
      2) Assemble oral paste (individual doses or multiple doses in administration gun) within easy reach of handler.
      3) Place tube portion in mouth of animal and force correct dosage into mouth on upper rear portion of tongue.
      4) Mark and release animal.
   b. Feed or mineral additives
      1) Sprinkle additive as listed on package or
      2) Mix into feed at appropriate rate.
   c. Injectable compound
      1) Determine proper dosage (usually based on weight).

2) Draw required dosage from bottle with correct size needle and syringe. (See Indiana *BQA Handbook* and Skill 36.)
3) Restrain cattle to be treated using a working chute or alley.
4) Administer injection according to manufacturer's directions.
5) Mark and release animal.

d. Water soluble
1) Place water soluble product into water supply.
2) Use recommended product dosage for consumption by cattle.

e. Drench
1) Place appropriate solution in a drenching syringe or bottle.
2) Restrain cattle.
3) Open mouth of animal to be treated.
4) Raise head of animal and insert end of drenching syringe along side of mouth and tongue.
5) Do not force end of syringe past base of tongue.
6) Expel solution into oral cavity of animal.
7) Mark and release animal.

f. Bolus
1) Restrain cattle.
2) Insert bolus into balling (bolus) gun.
3) Insert bolus gun into mouth of animal along side of mouth at base of tongue.
4) Depress plunger to dispense bolus into esophagus.
5) Repeat if animal spits out bolus.
6) Mark and release animal.

g. Pour-on compounds
1) Restrain cattle.
2) Put on protective gloves.
3) Pour recommended amount of compound into treatment cup and pour along top line of animal.
4) Mark and release animal.

2. Repeat as needed.
3. Record identity of each animal treated, product used and date treatment was administered.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are treated to remove/reduce internal parasites.

PROCESS

All performance elements for treating cattle to remove/reduce internal parasites are critical and must be performed in sequence for method selected. Method used varies according to facility protocol.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Appropriate insecticide/pesticide (oral, injectable, dust-on, pour-on or spray-on)
Applicator/operator license (if required)
Manufacturers' specifications and directions
Herd health protocol
Hand-held sprayer
Self-treatment devices
Back rubber (free choice)
Back rubber (forced use)
Tox-O-Wik
Dust bags or other self-treatment duster
Self-activating or timed sprayers
Insecticide impregnated ear tag(s)
Personal Protective Equipment (PPE)
Record keeping systems
Food and Drug Administration (FDA) standards/regulations
Environmental Protection Agency (EPA) standards/regulations

WORK TO BE PERFORMED

Apply appropriate insecticide/pesticide to cattle to control external parasites and pests.

PERFORMANCE CRITERIA

Insecticide/pesticide is administered to cattle at recommended levels according to herd health protocol and FDA standards/regulations. Cattle health and production are improved.

Time required to complete the skill varies based on type of treatment being administered.

PERFORMANCE ELEMENTS

1. Determine desired pesticide and method of application, and assemble appropriate equipment or materials.
   a. Oral (individual doses)
      1) Administer sustained release bolus.
      2) Administer according to manufacturers' guidelines.
   b. Injectable
      1) Select needle and syringe.
      2) Load syringe with appropriate amount of injectable solution.
      3) Administer solution according to manufacturer's guidelines.

c. Dust-on or pour-on
   1) Put on PPE.
   2) Apply recommended levels of pour-on or dust-on pesticide directly to cattle following manufacturer's guidelines.
   3) Treat each animal thoroughly with recommended dosage.
d. Spray-on
   1) Put on PPE.
   2) Mix pesticide according to manufacturer's guidelines.
   3) Spray each animal thoroughly with recommended dosage.
e. Self-applicator
   1) Make sure insecticide is appropriate, accessible and readily dispensed.
   2) Refill as needed.
f. Ear tag insecticide
   1) Use at labeled rate.
   2) Insert ear tag in ear of cattle to be protected.
   3) Alternate insecticide chemical family.
   4) Remove ear tag or do not reapply at end of insect season.

2. Conform to EPA and FDA standards/regulations regarding pesticide use.
3. Record compound, date used and animal identification.

PERFORMANCE ASSESSMENT CRITERIA

EPA and FDA standards/regulations are followed and cattle are protected from external parasites and pests.

Applicator/operator license (if required) is maintained.

PRODUCT

External parasites and pests are controlled.

PROCESS

All performance elements for controlling external parasites and pests are critical. Performance elements for each selected method (oral, injectable, dust-on or pour-on, spray-on and ear tags) must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Devices to play back bird distress calls
Guns and birdshot
Chemicals
Conventional rodent traps
Live traps
Bait stations
Personal Protective Equipment (PPE)
Manufacturers' instructions
Safety guidelines
Environmental Protection Agency (EPA) standards/regulations

WORK TO BE PERFORMED

Reduce, eliminate and/or prevent return of birds, rodents and other animal pests to facility.

PERFORMANCE CRITERIA

Animal pests are removed from cattle facility.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

Note: Be certain that cattle, pets and children do not have access to guns, chemicals, traps or bait stations.

1. Maintain cleanliness of facilities.
2. Inspect buildings and facilities for signs of birds, rodents and other animal pests, such as
   a. Bird droppings and feathers,
   b. Nests,
   c. Freshly dug earth,
   d. Holes or tunnels,
   e. Holes pecked or chewed in building material,
   f. Rodent or animal waste or droppings and
   g. Footprints.
3. Determine preferred method of control.
4. Place speakers where recordings of distressed birds can be widely broadcast.
5. Use firing of guns loaded with bird shot to reduce populations and scare away other birds.
6. Put on gloves and a respirator before handling and applying chemical agents to surfaces frequented by birds.

7. Use other PPE before handling any dead or trapped animals.
8. Place live traps and conventional traps in areas pests frequent or use for travel lanes.
9. Place bait stations in areas were evidence of pests is found.
10. Check live traps and bait stations on a daily basis.
11. Empty traps in an appropriate location and dispose of dead pests properly.
12. Replenish bait stations as needed, increasing amount of bait if all bait has been eaten.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Birds, rodents and other animal pests in and around facilities are reduced or eliminated.

PROCESS

All performance elements for controlling birds, rodents and other animal pests are critical, but not all performance elements will be utilized in all facilities. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Any of the following individually or combined:
- Fly/pest strips
- Insecticide sprays and sprayers/dispensers
- Fly predators or other biological controls
- Insecticide poisons or bait stations
- Feed products containing insecticides

Personal Protective Equipment (PPE)
Manufacturers' directions
Facility protocol
Environmental Protection Agency (EPA) standards/regulations
Illinois Department of Agriculture (IDOA) standards/regulations

WORK TO BE PERFORMED

Control insect pests in and around cattle living area.

PERFORMANCE CRITERIA

Insect pest populations are controlled according to facility protocol and EPA and IDOA standards/regulations.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

1. Begin fly and insect control according to facility protocol.
2. Plan for and provide proper animal waste management and good feedlot sanitation.
3. Follow manufacturers' directions for safe use and handling of equipment and compounds.
4. Put on PPE.
5. Place pest strips, bait and bait stations where cattle, pets and children **do not** have access to them.
6. Maintain pest strips, bait and bait stations (e.g., replace, refill or repair).
7. Mix and use insecticide sprays as needed and according to manufacturers' directions.
8. Store pesticide products according to manufacturers' label and away from feed and other farm chemicals.
9. Place feed products containing insecticides where cattle will consume them.
10. Release fly predators at onset of fly season and as recommended thereafter.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Flies and other insect pests in and around cattle living area are controlled.

PROCESS

All performance elements for insect pest control are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used depending on control method(s) selected.

MOVE CATTLE ON FOOT.

MOVING CATTLE

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Broom handle, stick or whip with plastic streamers or a plastic bag on its end
Feed and feed bucket

WORK TO BE PERFORMED

Move cattle on foot.

PERFORMANCE CRITERIA

Cattle are moved efficiently, quietly and with minimal stress.

Time required to complete the skill varies depending on animal behavior and distance to be covered.

PERFORMANCE ELEMENTS

1. Review performance elements listed in Skill 24, if needed.
2. Check for objects or facility design that may interfere with moving of cattle and modify if needed.
3. Use enticement of feed to encourage cattle to move toward desired location.
4. Move cattle quietly and slowly at all times, avoiding shouting, running or striking them.
5. Move cattle forward in chutes only when there is room for them to move forward.
6. Move cattle in pens or corrals by using a broom handle or whip with a plastic bag attached. (Cattle tend to move away from rustling plastic.)
7. Move cattle in small groups (ten or less) instead of individually, and when moving single file, allow cattle to see other animals in front of them.
8. Realize that cattle will usually turn to look at you if you enter blind spot directly behind them since they want to know where you are at all times.
9. Utilize flight zone of cattle by staying out of it when you do not wish cattle to move and edging into it when you wish to move them.
10. Avoid exciting cattle restricted in a chute by not leaning over them into their flight zone.
11. Invade flight zone slowly in order to move cattle that have turned to look at you. (Make sure animal has room to move away, otherwise it may panic or become aggressive.)
12. Recognize that the point of balance for cattle is in the middle of their shoulder and that moving in front of the point of balance will make cattle turn away or go backwards; moving behind their point of balance will tend to move cattle forward.

13. Drive cattle by approaching them behind point of balance at a 45° to 60° angle to their shoulder.
14. Move groups in open spaces as follows:
    a. Move forward at an angle slightly away from group when group is moving as desired.
    b. Move straight toward cattle a few steps if it is necessary to speed them up.
    c. Turn and walk toward rear of group at a slight angle to maintain group movement.
    d. Return to forward movement at an angle once cattle are again moving forward as desired.
    e. Repeat this pattern as needed.
    f. Have a second handler (if available) walk near group leader on same side as handler driving cattle, moving in or out of leader's flight zone in order to move animal forward when desired.
    g. Move stragglers forward by putting pressure on their flight zone by approaching from an angle ahead of them, aimed at a point just behind their point of balance. Do not fully invade flight zone as the threat by handler and the pull of the cattle ahead will encourage them to rejoin group while still in their safe positions on edge of herd.
15. Use well trained dogs, if available, for work in open areas and large pens but not in small confinement areas.
16. Make cattle walk, not run, whenever possible.
17. Move cattle always in a controlled, quiet manner.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are moved on foot.

PROCESS

All performance elements for moving cattle on foot are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Cattle
Method of transport (e.g., truck, air)
Dry, high quality grass hay
Health certificates, permits, brand certification, as needed
Food and Drug Administration (FDA) regulations and guidelines
United States Department of Agriculture (USDA) regulations and guidelines

WORK TO BE PERFORMED

Transport cattle.

PERFORMANCE CRITERIA

Cattle are transported with minimal stress, injury and loss.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

1. Withdraw any restricted medications or additives within approved guidelines.
2. Select best-suited method of transportation, usually trucking.
3. Make sure all paperwork is current, including cattle records, health certificates and any needed permits.
4. Condition cattle properly by withholding grain for 12 hours before loading, removing access to water within 2 to 3 hours of shipment, and allowing free access to high quality grass hay.
5. Avoid shipping during extremes in weather and do not ship during heat of day during hot weather.
6. Provide protection from weather while still providing ventilation in trucks or trailers.
7. Inspect interior of trucks or trailers and remove or repair any items that might cause injury.
8. Use a solid-walled, curved, working chute to lead to a ramp with a slope no greater then 20° and a level section or short step up just prior to entry into truck or trailer.
9. Handle cattle quietly, using behavioral skills discussed in Skill 24.
10. Insist on rest stops for extended shipments, usually resting by unloading, feeding and watering at intervals no longer than 28 hours.
11. Provide footing for cattle, usually 2 inches of sand, adding straw in cold weather for calves or animals loaded lightly enough to permit lying down.
12. Have upper deck of trucks high enough to prevent back bruises on cattle below.

13. Partition mixed loads into separate classes and partition calves from larger animals.
14. Load to prevent crowding and to avoid excitement.
15. Do not overload.
16. Use canvas slappers instead of canes or whips.
17. Drive trucks and trailers carefully, taking turns slowly and slowing down gradually.
18. Stop and inspect load after a few hours and aid any downed cattle to rise.
19. Plan for rest of market animals prior to harvest.
20. Back up squarely to unloading dock.
21. Unload slowly on gradual, cleated inclines.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Cattle are transported.

PROCESS

All performance elements for transporting cattle are critical. Performance elements are numbered to show appropriate sequence for completing the skill, however, different means of transportation may be utilized as well as a different sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Permanently identified females intended for or already in breeding herd
Pastures with suitable forage
Feeding and nutrition guidelines (e.g., National Research Council [NRC] Nutrient Requirements of Cattle, nutritionist's recommendations, etc.)
Shelter, as needed
Facility specific items
Performance information, especially of animal, offspring and siblings

WORK TO BE PERFORMED

Manage and evaluate breeding females.

PERFORMANCE CRITERIA

Health-managed females selected for breeding should have desirable production traits for needs of facility and production environment.

Time required to complete the skill varies but management is an ongoing process.

PERFORMANCE ELEMENTS

1. Determine which traits are most important in females for facility goals and environment.
2. Select replacement females based on traits considered most important, such as pelvic size, age, feed efficiency and hardiness.
3. Cull females who do not perform up to facility standards.
4. Provide access to pastures for exercise and feeding.
5. Give appropriate examinations.
   a. Evaluate cows annually for soundness of mouths, eyes, feet and udders and treat or cull as needed.
   b. Perform pregnancy or other reproductive examination. (See Skill 55.)
6. Provide control of internal and external parasites and pests. (See Skills 48 and 49.)
7. Vaccinate females according to farm protocol and/or veterinarian recommendations.
8. Supply adequate amounts of appropriate rations, based on age, condition and reproductive state, using NRC or other nutritional guidelines.
9. Separate females by age and body condition in order to feed different rations, as heifers should reach a body condition score of 5.5 to 6 or 67% of their mature weight.
10. Purchase replacement females early and locate them on breeding facility 60 days prior to planned use. Include a 30-day period of isolation before turning them out with other facility cattle.

11. Make sure to have female in good condition while pregnant as she will probably lose condition while lactating.
12. Provide adequate shelter to help maintain condition and health of animals.
13. Perform any other facility-specific procedures required such as branding or ear tagging.
14. Place females with breeding males for predetermined breeding season.
15. Evaluate conception and live calf rates, along with calf performance data, to determine whether or not to keep or cull females.
16. Cull and replace females as needed.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Breeding females are properly managed and evaluated for needs of a given facility.

PROCESS

All performance elements for managing and evaluating breeding females are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however a different sequence may be used.

DETERMINE REPRODUCTIVE STATUS OF BREEDING FEMALES.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Breeding females to be evaluated
Restraint such as A.I. chute or squeeze chute
Skilled technician or veterinarian
Plastic disposable obstetrical sleeves
Lubricant (water soluble preferred)
Ultrasound equipment (optional)
Rubber band
Recording materials

WORK TO BE PERFORMED

Determine reproductive status of breeding females, usually done when calves are weaned from their dams.

PERFORMANCE CRITERIA

Reproductive status, especially pregnant or nonpregnant, is determined.

Time required to complete the skill depends on information to be determined and equipment used, but rectal palpation or transrectal ultrasound imaging usually takes 3 - 5 minutes.

PERFORMANCE ELEMENTS

1. Restrain females in a chute that permits animals to stand comfortably, but protects technician or veterinarian from kicks, while allowing access to rectal area.
   Note: Rectal palpation should only be done under supervision of a trained, experienced technician/supervisor or veterinarian.
2. Put on disposable glove, using rubber band at top to keep it in place.
3. Lubricate glove, especially hand area.
4. Wipe lubricant across anus, shape hand into a wedge, and, using firm but not hurried pressure, slip fingers and thumb into anus.
5. Fold fingers into a loose fist once sphincter muscle of anus has been passed.
6. Slide hand and arm slowly and gently forward into rectum.
7. Remove feces that inhibit ability to feel for pelvis, cervix and uterus; otherwise simply slide hand under feces.
8. Remove hand after removing excess feces and cup transducer probe in hand if using transrectal ultrasound. Then simply and gently move hand back through anus and then forward while observing image produced on a viewing screen.
9. Slide hand gently from side to side and forward, following curvature of rectum, feeling for landmarks (if not using transrectal ultrasound).

10. Feel for bony structure of pelvis, followed by cervix, then body of uterus.
11. Use middle finger to separate uterine horns but do not press downward as this may tear rectal wall.
12. Palpate horns gently. One horn should feel slightly to noticeably larger if animal is pregnant, depending on stage of pregnancy, beginning at about 30 days of pregnancy and more pronounced by day 45. By 90 days of pregnancy, cotyledons and uterine artery can also be felt.
13. Use transrectal ultrasound imaging to determine pregnancy status as early as day 18 and certainly by day 20 of fetal development; a heartbeat can be detected at day 22.
14. Use transrectal ultrasound to evaluate ovarian activity in noncycling females and to diagnose problems such as ovarian or uterine cysts, gathering of fluid in uterus and tumors.
15. Use transrectal ultrasound to determine sex of developing fetus. This is best done at 55 - 70 days of gestation in large cows, 60 - 80 days of gestation in smaller cows and with 92% or more accuracy.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Reproductive status of breeding females is determined.

PROCESS

All performance elements for determining reproductive status of breeding females are critical. Performance element selection will vary according to facility protocol.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Breeding males (bulls)
Bull pen pasture with suitable forage
Feeding and nutrition guidelines (e.g., National Research Council [NRC] Nutrient Requirements of Cattle, nutritionist's recommendations, etc.)
Shelter, as needed
Facility specific items
Performance information on relatives and/or individual performance records
Expected Progeny Differences (EPDs)

WORK TO BE PERFORMED

Manage and evaluate breeding males (bulls).

PERFORMANCE CRITERIA

Health-managed bulls are selected for performance and carcass traits to meet specific production goals.

Time required to complete the skill varies but management is an ongoing process.

PERFORMANCE ELEMENTS

1. Provide access to pastures to provide adequate exercise.
2. Give appropriate examinations.
   a. Evaluate bulls annually for soundness of mouths, eyes and feet and treat or cull as needed.
   b. Perform examination of reproductive organs and conduct semen evaluation. (See Skills 58 and 59.)
3. Provide control of internal and external parasites and pests. (See Skills 48 and 49.)
4. Vaccinate bulls according to farm protocol.
5. Supply adequate amount of appropriate rations, based on age and condition of animal, using NRC or other nutritional guidelines.
6. Make sure to have bull in good condition before beginning breeding season, usually planning to increase his condition to desired level over a 60-day period.
7. Purchase any new bulls early and locate them on breeding facility 60 days prior to planned use. Include a 30-day period of isolation before turning new bulls out with other facility cattle.
8. Provide adequate shelter in extremely hot or extremely cold weather in order to prevent injury and maintain fertility.

PERFORMANCE ASSESSMENT CRITERIA

9. Evaluate and select bulls for their appropriateness for facility use. Review performance record of animal and/or relatives and expected progeny differences, if available.
10. Place bull with an appropriate number of females, usually 15 - 20 for yearling bulls, 20 - 25 for two-year-old bull and 25 - 35 for mature bulls.
11. Evaluate bull performance in terms of females pregnant, live calves produced, calf performance data and other traits important to facility.
12. Cull bulls that do not perform to facility standards.

PRODUCT

Breeding males (bulls) are properly managed and evaluated for needs of a given facility.

PROCESS

All performance elements for managing and evaluating breeding males (bulls) are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Breeding females
Heat detection aids (heat patch, electronic signal device, wax marker, chin ball marker, etc), if desired.
Heat detecting animal (altered bull or hormonally treated cow), if desired
Recording materials

WORK TO BE PERFORMED

Detect estrus (heat) in females for natural breeding, artificial insemination or scheduling of breeding.

PERFORMANCE CRITERIA

Sexual receptivity is determined to make breeding more timely, ensure better conception rates and provide proper timing for artificial insemination.

Time required varies based on method of housing and heat detection aids used, but observation of a herd usually takes ½ - 1 hour, morning and evening.

PERFORMANCE ELEMENTS

1. Place any heat detection aids to be used that go directly onto female, such as glue-on heat patches, electronic transmitters or wax markers, on her rump, usually to top of sacrum between tailhead and hooks (hipbones).
2. Place a chin ball marker on heat detecting animals, if they are to be used. When using an altered bull (e.g., vasectomized, deviated penis, blocked penis or penectomized) or testosterone treated female, place heat detecting animal in with breeding females to provide marks on backs of mounted breeding females.
3. Refer to observation records to determine which animals should be most closely observed, since normal heat cycle is 18 to 21 days.
4. Observe all breeding females for behavior indicating estrus, since several of these behaviors combined usually indicate estrus. These include
   a. Increased nervousness, such as walking or bawling
   b. Congregating and seeking out others
   c. Mounting other cows frequently
   d. Standing for other cows or heat detecting animal to mount
   e. Clear mucus from vulva, often caught on tail and seen on hindquarters
   f. Swollen vulva
   g. Roughen hair or scrape marks on tailhead, along hip and/or over hip
   h. Dirt or scrape marks on flanks

5. Examine female for marks on her back and hips if chin ball markers are being used.
6. Check receiving system, usually farm computer, for signals from transmitters.
7. Observe heat-detection patch to see if vial of colored fluid has been broken, indicating that mounting has occurred. Note: False positives may occur due to pressure on patch from other sources, such as low branches.
8. Record observations.
9. Plan to breed females within 12 - 18 hours of standing heat and preferably after standing heat, unless other farm protocol exists.
10. Have cows not caught in heat within 18 to 21 days examined by a veterinarian or technician to determine reproductive status.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Sexual receptivity (heat) of breeding females is determined, allowing them to be bred at right time for conception.

PROCESS

All performance elements for detecting estrus are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, methods used will determine which elements are appropriate.

EVALUATE BREEDING MALE (BULL) FERTILITY.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Potential breeding males (bulls)
Measuring tape
Restraint method (see performance area "Restraint and Behavior")
Semen evaluation results

WORK TO BE PERFORMED

Evaluate probable breeding male (bull) fertility.

PERFORMANCE CRITERIA

Bulls should have adequate testicular size, sperm with characteristics within acceptable perimeters, normal reproductive organs, physical soundness and reasonable libido.

Time required to complete the skill varies depending on criteria evaluated.

PERFORMANCE ELEMENTS

Note: This skill should be done by or in consultation with a veterinarian or other approved technician. Semen characteristics and scrotal size vary greatly by age, breed and environmental conditions. Figures shown below are common as listed in the Beef Cattle Handbook, 1999, University of Wisconsin.

1. Evaluate bull for any abnormal conformation and/or soundness (e.g., swollen joints, lameness, severe limb deviation, scrotal abnormalities, undesirable heritable traits or other abnormalities that would interfere with ability to mount females); cull if needed.
2. Restrain bull and measure scrotal size. Circumference considered "good" is listed below.

Age	Circumference rated as "Good"
12-14 months	30-34 centimeters
15-20 months	31-36 centimeters
21-30 months	32-38 centimeters
over 31 months	34-39 centimeters

3. Restrain bull for veterinary rectal palpation of internal reproductive organs.

4. Collect semen (see Skill 59) for analysis of semen and sperm quality.
   Major factors to consider and ranges in normal mature bulls are as follows:

Volume	4 to 8 milliliters
Concentration (million/milliliter)	800 to 1500
Morphology	65 to 90%
Progressively motile	40 to 75% immediately after collection

5. Test breed and eventually pregnancy check a normal, estrus female or females to determine bull's ability to mount, penetrate, inseminate and cause conception.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Breeding male (bull) fertility is evaluated.

PROCESS

All performance elements for evaluating breeding male (bull) fertility are critical and must be performed in sequence.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Breeding male (bull), halter broken
Collection area
Restrained mount animal (teaser)
Artificial vagina (A.V.) or electroejaculator
Lubricant, water soluble
Hot water
Collection container or vial
Semen extender (if needed)

WORK TO BE PERFORMED

Collect semen from breeding males for insemination or semen evaluation.

PERFORMANCE CRITERIA

Semen containing sperm rich portions is obtained.

Time required to complete the skill varies depending on degree of bull's previous experience and time needed for teasing (arousing breeding interest). Experienced bulls may be collected in 5 minutes or less, while inexperienced bulls may take longer. Electroejaculation takes up to 5 minutes, as mild, pulsating current needs to be gradually increased.

PERFORMANCE ELEMENTS

1. Plan to collect bulls for insemination purposes on a regular schedule, often Monday, Wednesday, and Friday (twice daily if needed); for semen evaluations, collect as needed.
2. Provide and restrain a mount animal, often a steer, for collection with an A.V.
3. Prepare A.V. as follows:
   a. Fill space between wall of rubber casing and inner rubber liner with hot water (60°C), then adjust with air pressure if needed to provide adequate pressure.
   b. Attach a rubber cone on end of A.V. casing and on small end of cone, attach a collection vial, usually a 15 milliliter graduated test tube.
   c. Cover A.V. with an insulated jacket to keep it at 45°C or slightly higher at time of collection.
   d. Apply a sterile, nonspermicidal, water soluble lubricant to inner liner.
4. Have one handler designated to be collector and manage A.V.
5. Bring bull to collection area and provide precollection stimulation of 3 - 5 false mounts with active restraint. (Use a nose lead or ring.)
6. Allow bull to mount teaser while collector diverts bull's penis into A.V. which is held along side flank of mount.

7. Tilt A.V. downward toward test tube as soon as bull ejaculates, which will be immediately on contact with warm, lubricated interior of A.V. if temperature is warm enough.
8. Remove collection tube and semen and place tube in a water bath maintained at 34°C.
9. Measure concentration and extend and freeze as needed, or examine sample for semen analysis.
10. Use electroejaculation as follows for bulls that are unable to mount:
    Note: Use electroejaculation units only under supervision or after previous experience.
    a. Insert probe of electroejaculation unit into rectum.
    b. Gradually increase frequency and voltage to stimulate erection and eventual ejaculation.
11. Return bull to regular or temporary housing.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Semen is collected for insemination purposes or for semen analysis.

PROCESS

All performance elements for collecting semen are critical; however, elements utilized will vary according to method used. Performance elements are numbered to show appropriate sequence for completing the skill; however a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Restrained breeding female(s) (see Skill 56)
Breeding protocol
Liquid nitrogen semen storage tank
Semen, usually frozen in straws
Inseminating instrument
Disposable plastic sleeve
Lubricant such as mineral oil or liquid soap
Thawing unit
Thermometer
Scissors or snipper
Tweezers
Paper towels
Protective gloves
Recording materials

WORK TO BE PERFORMED

Inseminate females artificially at a time appropriate for conception.

PERFORMANCE CRITERIA

Semen is delivered into cervical end of uterus of estrus or immediately postestrus female via inseminating tool.

Insemination is completed without injury.

Time required to thaw frozen semen is directed by a technician or semen supplier but is generally 30 seconds. Semen should be inserted into female within 20 minutes of proper thawing and significantly loses quality if re-frozen.

Time required to inseminate is 5 - 10 minutes.

PERFORMANCE ELEMENTS

Note: Insemination services and semen may be obtained from commercial suppliers who will also provide equipment and a technician if requested by producer. This is often preferable for small producers who do limited amounts of artificial insemination.

1. Select sire(s) and obtain semen.
2. Store semen in liquid nitrogen tank, organized by breed and/or sire.
3. Record semen storage arrangement information.
4. Sort cows to be bred and quietly move to restraint area.
5. Identify and record identification number of restrained cow to be bred.

6. Prepare a thaw box for semen, such as a widemouthed thermos or commercial electric thaw unit, with warmed water.
7. Check temperature before placing straw into water bath and warm water as needed.
8. Put on protective gloves and handle frozen items and liquid nitrogen carefully as tissue is easily damaged by intense cold.
9. Open liquid nitrogen tank and remove circular plug.
10. Locate canister that contains semen to be used, lift wire that holds correct canister and pull canister out just far enough to identify cane containing desired semen.
11. Lift cane with one hand and use a pair of tweezers to quickly remove a semen straw.
12. Put cane back in place without delay, then check identification on straw and if it is correct, place it in thaw bath.
13. Discard any incorrect semen straws as quality is certain to have declined due to partial thawing; obtain correct semen before proceeding.
14. Thaw semen according to supplier's directions.
15. Prewarm inseminating instrument if weather is cold.
16. Cut off sealed end of straw squarely with scissors or snipper.
17. Load inseminating instrument with straw as directed by manufacturer's directions or supervisor.
18. Hold loaded insemination instrument inside inseminator's shirt, jacket or coveralls for warmth.
19. Put on a disposable sleeve and apply lubricant to back of hand and to fingers.
20. Stand to one side of female's hip in order to avoid being kicked.
21. Hold tail out of the way with ungloved hand, then use back of gloved hand to rub lubricant across anus, taking care not to get lubricant on vulva.
22. Insert hand firmly but carefully, with fingers and thumb formed into a wedge, through anus into rectum.
    Note: Rectal palpation and insemination should be done only under supervision until adequate skills are developed.
23. Proceed carefully into rectum until feces are encountered, taking care not to damage rectum by using undue force.
24. Remove feces manually if necessary; repeat as needed, usually only a few times.
25. Move hand forward carefully until bony cradle of pelvis can be detected; then proceed slowly with a flattened hand, feeling from side to side and slightly downward to find cervix which is a cartilagenous structure about four inches long and one inch in diameter.
26. Grasp cervix gently through rectal wall, thumb on top and fingers partially under cervix, while taking care not to tear rectal wall.
27. Insert inseminating instrument through vulva into vagina with a slight upward tip until it is 3 - 4 inches into vagina, then move it forward parallel to plane of rectum.
28. Use thumb and fingers to align cartilage rings and help direct inseminating instrument into cervix.
29. Move instrument forward into cervix by manipulating and leading with thumb and first two fingers.
30. Insert instrument until it slides without resistance, indicating that it is in an uterine horn, then move its tip back to front edge of cervix.
31. Depress plunger gradually on instrument, over a five-second minimum, to force semen from straw into uterus.
32. Remove insemination instrument and arm.
33. Record number of the female and insemination data as well as date of insemination.
34. Release female.
35. Repeat all steps as needed.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Breeding females are successfully artificially inseminated.

PROCESS

All performance elements for artificial insemination of females are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used. Minor differences in method may occur due to farm breeding protocol.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Breeding males (bulls)
Breeding females

WORK TO BE PERFORMED

Manage natural breeding process.

PERFORMANCE CRITERIA

Breeding females are bred and conceive during desired breeding season, normally 60 - 75 days.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

1. Determine desired breeding season (length of time bulls will be pastured with females).
2. Select bulls that meet facility standards.
3. Condition bulls properly prior to putting them to pasture with females; bulls should have a body condition score of 5.5 - 6.5 on a 9-point scale.
4. Make sure cattle have been appropriately quarantined, vaccinated and/or tested before bringing them into herd.
5. Use one fertile, physically normal mature bull for 25 - 35 females if he will be housed with them for at least 45 days; restrict two-year-old bulls to 20 - 25 and yearling bulls to 20 or less females.
   Note: Breeders may want to mate a single female to a specific bull, especially in purebred operations. In this case, the female is usually bred just once, while in standing heat, in a pen or paddock.
6. Maintain separate herds and pastures for each breeding group, if possible, as this reduces likelihood of fighting and injuries.
   Note: In range situations, several bulls may run together with females in larger herds in case one or more of the bulls is unfertile or becomes unable to breed. An uneven number of bulls usually allows at least one bull to be attentive to the females. In multiple sire breeding groups bulls should be of similar age.
7. Observe bull(s) in herd to confirm that he remains a capable breeder.
8. Remove bull(s) when desired breeding season or interval is over.
9. Determine reproductive status of females (see Skill 55) and cull females and/or bulls based on results and facility protocol.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Natural breeding process is managed.

PROCESS

All performance elements for managing natural breeding processes are critical and must be performed in sequence; however, facility protocol may call for different male to female ratios.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Recorded data
Record keeping system, usually computerized
Regulatory and management record requirements (e.g., FDA Compliance Policy Guidelines)

WORK TO BE PERFORMED

Update information onto appropriate forms or by using computer software and enter data into record maintenance system.

PERFORMANCE CRITERIA

Information is maintained according to regulatory and facility management record requirements.

Time required to maintain records varies based on type and quantity of records being updated.

PERFORMANCE ELEMENTS

Note: Check with University of Illinois Extension Service and/or specific breed organizations for a list of software packages available. Also visit the following websites for information: beefnet.outreach.uiuc.edu/links.clm?section=6; beef.org/library/hot_links/agribusiness.htm. (Look under the heading "software.")

1. Verify recorded data is prepared for entry.
2. Transfer recorded data from procedures used (such as feed mixing, ration formulation, weighing, vaccinating, implanting, breeding, etc.) into record keeping system.
3. Maintain records according to management requirements or regulations. turn away or go backwards; moving behind their point of balance will tend to move cattle forward.

PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Recorded data is entered into record maintenance system.

PROCESS

All performance elements for moving cattle on foot are critical. Performance elements are numbered to show appropriate sequence for completing the skill; however, a different sequence may be used.

SKILL STANDARD

CONDITIONS OF PERFORMANCE

Given the following:

Updated data
Record keeping system
Individual facility's targets/goals
Economic outlook
Industry averages

WORK TO BE PERFORMED

Analyze facility records in order to make management decisions.

PERFORMANCE CRITERIA

Records are analyzed and the economic and relative performance of the operation is determined.

Time required to complete the skill varies.

PERFORMANCE ELEMENTS

1. Determine records to be analyzed.
2. Verify data is current and updated.
3. Review production records (e.g., feed efficiency, rate of gain, live calves produced, etc.).
4. Make management and business decisions based on analysis of records and interpretation of economic outlook.

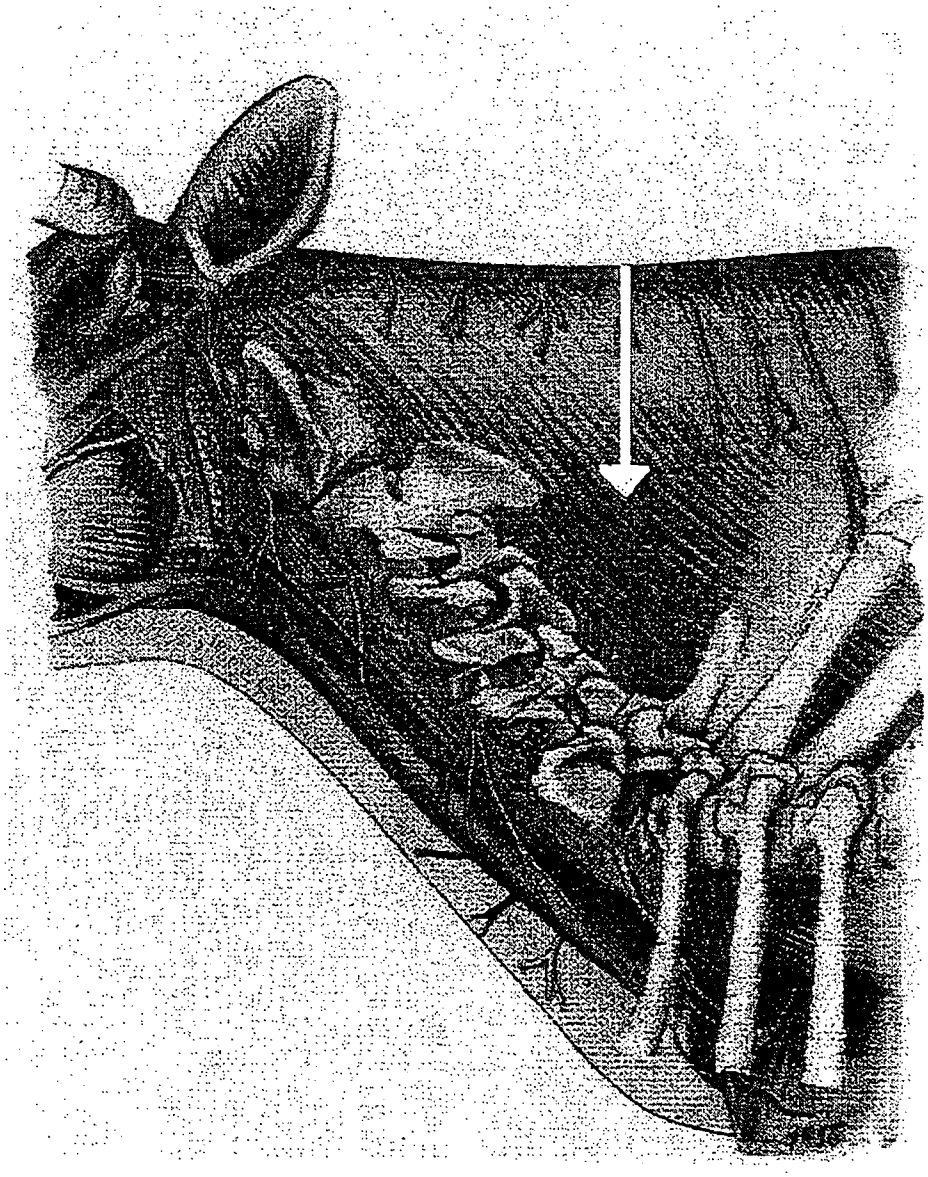
PERFORMANCE ASSESSMENT CRITERIA

PRODUCT

Facility records are analyzed.

PROCESS

All performance elements for analyzing records are critical and must be performed in sequence.



Avoid the ligaments and fat along the top of the neck.
Avoid the vertebrae that form a curve along the lower part of the neck.

American Association of Bovine Practitioners. (AABP)	Formed as a nonprofit organization in 1965, this is an international association of veterinarians organized to enhance the professional lives of its members through relevant continuing education that will improve the well-being of cattle and the economic success of their owners, increase awareness and promote leadership for issues critical to cattle industries, and improve opportunities for careers in bovine medicine. www.aabp.org/
Certified Livestock Manager	An individual who has passed a certification test as a livestock manager under the regulations of the Livestock Management Facilities Act. www.outreach.uiuc.edu/livestock/SOWM/regs/LMFA/manager
Food and Drug Administration (FDA)	The federal regulatory agency whose mission is to promote public health by promptly and efficiently reviewing clinical research and taking appropriate action in a timely manner on the marketing of regulated products. Protects the public health by ensuring (1) that foods are safe, wholesome, sanitary and properly labeled; (2) that human and veterinary drugs are safe and effective; (3) that there is reasonable assurance of the safety and effectiveness of devices intended for human use; (4) that cosmetics are safe and properly labeled, and (5) that public health and safety are protected from electronic product radiation. The FDA participates through appropriate processes with representatives of other countries to reduce the burden of regulation, harmonize regulatory requirements and achieve appropriate reciprocal arrangements. The FDA also works in consultation with experts in science, medicine and public health, and in cooperation with consumers, users, manufacturers, importers, packers, distributors and retailers of regulated products. www.fda.gov/
Illinois Beef Association (IBA)	The Illinois Beef Association is a statewide, nonprofit organization working to protect, promote and advance the beef cattle industry in Illinois. The IBA coordinates beef quality assurance education and certification programs for Illinois. The IBA also serves as both the trade association, which is member driven, and as the qualified beef council for the state. www.illinoisbeef.com/

Illinois Department of Agriculture (IDOA)	The regulatory and advisory agency for agriculture in the state of Illinois. www.agr.state.il.us/
Livestock Management Facilities Act (LMFA)	Contains statutes related to the management of livestock facilities and is designed to keep the Illinois livestock industry productive and environmentally responsible. www.agr.state.il.us/lmfa.html and www.legis.state.il.us/ilcs/ch510/ch510act77/
National Cattlemen's Beef Association (NCBA)	Initiated in 1898, the national Cattlemen's Beef Association is the marketing organization and trade association for America's one million cattle farmers and ranchers. The NCBA is a consumer-focused, producer-directed organization representing the largest segment of the nation's food and fiber industry. www.beef.org/
National Research Council (NRC)	A division of the National Academy of Sciences which publishes bulletins giving nutrient requirements and allowances of various domestic animals. www.nas.edu/nrc/
Occupational Safety and Health Administration (OSHA)	The federal agency charged with establishing and enforcing protective standards and providing technical assistance and consultation programs. Their mission is to save lives, prevent injuries and protect the health of America's workers. www.osha.gov/
Personal Protective Equipment (PPE)	The equipment designed to protect handlers from injury. This equipment should be selected based on the procedures to be accomplished, referring to manuals or supervisors if in doubt of its appropriateness. PPE commonly includes (1) hearing protectors, safety glasses or goggles; (2) gloves [rubber or latex to protect from caustic or toxic substances, leather or canvas to protect from abrasion, disposable plastic to maintain biosecurity]; (3) boots [heavy leather or rubber for protection and disposable plastic for biosecurity]; (4) respirators, air-filter masks or air pack and 5) safety lines.

Title 35 of the Illinois Administrative Code	Environmental regulations for the state of Illinois, commonly referred to as Title 35: Environmental Protection. The sections most likely to affect cattle producers are Subtitle E: Agriculture Related Pollution and Subtitle C: Water Pollution. www.ipcb.state.il.us/title_35/main.htm
United States Department of Agriculture (USDA)	Formed in 1862, the USDA is a government agency which has many functions, including responsibility for the safety of meat, poultry and egg products. www.usda.gov/

Academic Skills	Skills (and related knowledge) contained in the subject areas and disciplines addressed in most national and state educational standards, including English, mathematics, science, etc.
Assessment	A process of measuring performance against a set of standards through examinations, practical tests, performance observations and/or the completion of work portfolios.
Content Standard	A specification of what someone should know or be able to do to successfully perform a work activity or demonstrate a skill.
Critical Work Functions	Distinct and economically meaningful sets of work activities critical to a work process or business unit which are performed to achieve a given work objective with work outputs that have definable performance criteria. A critical work function has three major components: • **Conditions of Performance:** The information, tools, equipment and other resources provided to a person for a work performance. • **Work to Be Performed:** A description of the work to be performed. • **Performance Criteria:** The criteria used to determine the required level of performance. These criteria could include product characteristics (e.g., accuracy levels, appearance, etc.), process or procedure requirements (e.g., safety, standard professional procedures, etc.) and time and resource requirements. The IOSSCC requires that these performance criteria be further specified by more detailed individual performance elements and assessment criteria.
Credentialing	The provision of a certificate or award to an individual indicating the attainment of a designated set of knowledge and skills and/or the demonstration of a set of critical work functions for an industry/occupational area.
Illinois Occupational Skill Standards and Credentialing Council (IOSSCC)	Legislated body representing business and industry which establishes skill standards criteria, endorses final products approved by the industry subcouncil and standards development committee and assists in marketing and dissemination of occupational skill standards.
Industry	Type of economic activity, or product or service produced or provided in a physical location (employer establishment). They are usually defined in terms of the Standard Industrial Classification (SIC) system.

Industry Subcouncil	Representatives from business/industry and education responsible for identifying and prioritizing occupations for which occupational performance skill standards are adapted, adopted or developed. They establish standards development committees and submit developed skill standards to the IOSSCC for endorsement. They design marketing plans and promote endorsed skill standards across the industry.
Knowledge	Understanding the facts, principles, processes, methods and techniques related to a particular subject area, occupation or industry.
Occupation	A group or cluster of jobs, sharing a common set of work functions and tasks, work products/services and/or worker characteristics. Occupations are generally defined in terms of a national classification system including the Standard Occupational Classification (SOC), Occupational Employment Statistics (OES) and the Dictionary of Occupational Titles (DOT).
Occupational Cluster	Grouping of occupations from one or more industries that share common skill requirements.
Occupational Skill Standards	Specifications of content and performance standards for critical work functions or activities and the underlying academic, workplace and occupational knowledge and skills needed for an occupation or an industry/occupational area.
Occupational Skills	Technical skills (and related knowledge) required to perform the work functions and activities within an occupation.
Performance Standard	A specification of the criteria used to judge the successful performance of a work activity or the demonstration of a skill.
Product Developer	Individual contracted to work with the standard development committee, state liaison, industry subcouncil and IOSSCC for the adaptation, adoption or development of skill standards content.
Reliability	The degree of precision or error in an assessment system so repeated measurements yield consistent results.

Skill	A combination of perceptual, motor, manual, intellectual and social abilities used to perform a work activity.
Skill Standard	Statement that specifies the knowledge and competencies required to perform successfully in the workplace.
Standards Development Committee	Incumbent workers, supervisors and human resource persons within the industry who perform the skills for which standards are being developed. Secondary and postsecondary educators are also represented on the committee. They identify and verify occupational skill standards and assessment mechanisms and recommend products to the industry subcouncil for approval.
State Liaison	Individual responsible for communicating information among all parties (e.g., IOSSCC, subcouncil, standard development committee, product developer, project director, etc.) in skill standard development.
Third-Party Assessment	An assessment system in which an industry-designated organization (other than the training provider) administers and controls the assessment process to ensure objectivity and consistency. The training provider could be directly involved in the assessment process under the direction and control of a third-party organization.
Validity	The degree of correspondence between performance in the assessment system and job performance.
Workplace Skills	The generic skills essential to seeking, obtaining, keeping and advancing in any job. These skills are related to the performance of critical work functions across a wide variety of industries and occupations including problem solving, leadership, teamwork, etc.

Margaret Blackshere	AFL-CIO
Skip Douglas	Lucent Technologies
Judith Hale	Hale Associates
Terry Hoyland	Caterpillar University Caterpillar, Inc.
Michael O'Neill	Chicago Building Trades Council
Janet Payne	United Samaritans Medical Center
Harold Reetz	Illinois Fertilizer & Chemical Association Potash and Phosphate Institute
Gene Rupnik	Hospitality Industry
Jim Schultz	Illinois Retail Merchants Association Walgreen Company

Lanny Anderson	Black Hawk College, East Campus
Steve Bailey	Family Tree & Garden Center
Rick Butler	Pekin Hardwood Lumber Co., Inc.
Thomas Guth	Lexington High School
Harold Hawkinson	Farm Owner/Operator
Paul Julius	Executive Director Midwest Food Processors Association
John Kraft	Owner Kraft Fertilizer, Inc.
Glen Nichols	President Precision Scales
Richard W. Nichols	Bureau of Land & Water Conservation
Tony Romolo	Illinois Laborers and Contractors Construction Apprenticeship and Training Program
Hugh David Scates	Pat Scates and Sons
Sharon Schwarz	Subcouncil Chair Schwarz Nursery
Lue Walters	Assistant State Conservationist for Community Assistance
Tom Wiles	State Liaison Illinois State Board of Education
William Schreck	State Liaison Illinois State Board of Education

APPENDIX F

BEEF PRODUCTION CLUSTER STANDARDS DEVELOPMENT COMMITTEE

Tom Anderson	Independent Producer Butler, IL
Ed Ballard	Animal systems Educator University of Illinois, Effingham Extension
Ryan Buckles	Director of Marketing Illinois Beef Association
Mark Ernst, DVM	John Wood Community College Agriculture Department
Cimeron Frost	Director of Industry Programs Illinois Beef Association
Alan Koch	Independent Producer Mt. Sterling, IL
Dan Koons	Independent Producer Shirley, IL
Skyler Martin	Independent Producer Oregon, IL
Arlyn Rabideau	Independent Producer Clifton, IL
Curt Rincker	Lake Land College and Independent Producer
Terry Rush	Independent Producer Pittsfield, IL
Tom Saxe	Animal Systems Educator Mt. Vernon Extension Center
Dave Seibert	Animal Systems Educator University of Illinois Extension East Peoria Extension Center

APPENDIX F

BEEF PRODUCTION CLUSTER STANDARDS DEVELOPMENT COMMITTEE

Kent Sickmeyer	Associate Professor Rend Lake Collegee
Gayla Sargent	Product Developer Parkland Community College
William Schreck	State Liaison Illinois State Board of Education

A. Developing an Employment Plan	1. Match interests to employment area. 2. Match aptitudes to employment area. 3. Identify short-term work goals. 4. Match attitudes to job area. 5. Match personality type to job area. 6. Match physical capabilities to job area. 7. Identify career information from counseling sources. 8. Demonstrate a drug-free status.
B. Seeking and Applying for Employment Opportunities	1. Locate employment opportunities. 2. Identify job requirements. 3. Locate resources for finding employment. 4. Prepare a resume. 5. Prepare for job interview. 6. Identify conditions for employment. 7. Evaluate job opportunities. 8. Identify steps in applying for a job. 9. Write job application letter. 10. Write interview follow-up letter. 11. Complete job application form. 12. Identify attire for job interview.
C. Accepting Employment	1. Apply for social security number. 2. Complete state and federal tax forms. 3. Accept or reject employment offer. 4. Complete employee's Withholding Allowance Certificate Form W-4.
D. Communicating on the Job	1. Communicate orally with others. 2. Use telephone etiquette. 3. Interpret the use of body language. 4. Prepare written communication. 5. Follow written directions. 6. Ask questions about tasks.
E. Interpreting the Economics of Work	1. Identify the role of business in the economic system. 2. Describe responsibilities of employee. 3. Describe responsibilities of employer or management. 4. Investigate opportunities and options for business ownership. 5. Assess entrepreneurship skills.
F. Maintaining Professionalism	1. Participate in employment orientation. 2. Assess business image, products and/or services. 3. Identify positive behavior. 4. Identify company dress and appearance standards. 5. Participate in meetings in a positive and constructive manner. 6. Identify work-related terminology. 7. Identify how to treat people with respect.

G. Adapting to and Coping with Change	1. Identify elements of job transition. 2. Formulate a transition plan. 3. Identify implementation procedures for a transition plan. 4. Evaluate the transition plan. 5. Exhibit ability to handle stress. 6. Recognize need to change or quit a job. 7. Write a letter of resignation.
H. Solving Problems and Critical Thinking	1. Identify the problem. 2. Clarify purposes and goals. 3. Identify solutions to a problem and their impact. 4. Employ reasoning skills. 5. Evaluate options. 6. Set priorities. 7. Select and implement a solution to a problem. 8. Evaluate results of implemented option. 9. Organize workloads. 10. Assess employer and employee responsibility in solving a problem.
I. Maintaining a Safe and Healthy Work Environment	1. Identify safety and health rules/procedures. 2. Demonstrate the knowledge of equipment in the workplace. 3. Identify conservation and environmental practices and policies. 4. Act during emergencies. 5. Maintain work area. 6. Identify hazardous substances in the workplace.
J. Demonstrating Work Ethics and Behavior	1. Identify established rules, regulations and policies. 2. Practice cost effectiveness. 3. Practice time management. 4. Assume responsibility for decisions and actions. 5. Exhibit pride. 6. Display initiative. 7. Display assertiveness. 8. Demonstrate a willingness to learn. 9. Identify the value of maintaining regular attendance. 10. Apply ethical reasoning.
K. Demonstrating Technological Literacy	1. Demonstrate basic keyboarding skills. 2. Demonstrate basic knowledge of computing. 3. Recognize impact of technological changes on tasks and people.
L. Maintaining Interpersonal Relationships	1. Value individual diversity. 2. Respond to praise or criticism. 3. Provide constructive praise or criticism. 4. Channel and control emotional reactions. 5. Resolve conflicts. 6. Display a positive attitude. 7. Identify and react to sexual intimidation/harassment.
M. Demonstrating Teamwork	1. Identify style of leadership used in teamwork. 2. Match team member skills and group activity. 3. Work with team members. 4. Complete a team task. 5. Evaluate outcomes.

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